

**Exhibit 3.35 – Existing Land Use**

<i>Land Use</i>	<i>Acres</i>
Residential	3,179
Commercial	500
Industrial	26
Other Urban	54
Transportation	406
Agriculture	1,696
Grassland/Mowed Grass	513
Shrub/Dense Shrub	3,593
Deciduous Forest	16,894
Coniferous Forest	829
Mixed Forest	5,013
Open Water	1,228
Barren	12
Electric Transmission Lines	473
<b>Total Study Area</b>	<b>34,416</b>

## **3.4 Land Use and Cultural, Social, and Economic Environments**

### **3.4.1 Land Use**

#### **3.4.1.1 Land Use and Land Cover**

Land use was identified using the USGS “A Land Use and Land Cover Classification System for Use with Remote Sensor Data” (USGS, 1983).

Forest land is the dominant land use in the study area, encompassing approximately 66 percent of the area (exhibits 3.14 and 3.35). The second-most dominant land use is shrub, which encompasses

approximately 10 percent of the study area. Because these two land uses dominate, most of the study area is sparsely developed. Approximately nine percent of the study area is residential and one percent is commercial. Most commercial development is located along Route 1A in Brewer.

The No-Build Alternative would result in adverse impacts to land use. Over time, traffic volumes along Routes 1A, 9, and 46 through the study area would increase, resulting in longer delays and congestion. As traffic volumes increase, more local traffic would divert to local roads seeking alternate routes to bypass traffic congestion in and approaching the study area. Increasing traffic volumes on local roads would lead to increased congestion and longer delays for motorists traveling on them, as well as a general decrease in the local quality of life. The increased congestion and longer delays would further exacerbate existing conditions that make it difficult for businesses to thrive and residents to travel unimpeded.

During public-involvement activities, residents in the study area favored keeping the build alternatives as separated from residential areas as possible. They strongly indicated that they placed a higher value on maintaining quiet residential areas than on preserving open space, which they felt was more important in comparison. In general, residents felt that the social

### 3 • I-395/Route 9 Transportation Study Environmental Impact Statement

**Exhibit 3.36 – Impacts to Land Use (acres)**

	No-Build	2B-2/ the Preferred Alternative	5A2B-2	5B2B-2
<b>Residential</b>		7	12	11
<b>Commercial</b>		3	4	3
<b>Agricultural</b>		21	23	29
<b>Transportation, Communications, Utilities</b>		5	7	7
<b>Mowed Grass</b>		5	6	6
<b>Shrub</b>		21	42	28
<b>Dense Shrub</b>		1	2	6
<b>Deciduous Forest</b>		89	98	93
<b>Coniferous Forest</b>		1	1	0
<b>Mixed Forest</b>		9	20	2
<b>Surface Water</b>		1	0 <sup>1</sup>	1
<b>Total</b>		163	215	186

*Note: <sup>1</sup> Impact less than a half-acre.*

environment should be valued more highly than the natural environment (section 4.3).

The build alternatives would impact land use through the acquisition of property and the conversion of land uses to transportation use. The conversion of land use would range from approximately 163 to 215 acres (exhibit 3.36).

For people living and working in proximity to the build alternatives, their view of the landscape in the area would change. The scenic view of some areas would be altered by the build alternatives and the loss of aesthetic resources such as vegetation, forestland, farmland, pastures, and/or streams.

The build alternatives would introduce additional lighting along highways and at the proposed interchanges and possibly lighting at the intersection. The build alternatives would introduce new lighting, to areas with little or no lighting, from headlights.

Lighting at the interchanges and intersection would allow motorists to safely enter and exit the build alternatives. Lighting from vehicles using the build alternatives would affect homes and businesses that are located close to them. Typically, low beam and high beam headlights shine no more than 350 and 450 feet ahead, respectively (Naval Safety Center, 2004).

#### 3.4.1.2 Relocations

Acquisition of the property for the right-of-way for the build alternatives would be in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (49 USC 4601 et seq.) and the Civil Rights Act of 1964. The process for property acquisition is explained in the State of Maine, Department of Transportation, *A Land Owner's Guide to the Acquisition Process* (MaineDOT, 2002). When it is determined that a property or portion of a property is to be acquired, a market assessment is performed. Relocation resources are available to all residential and business relocatees without discrimination. The MaineDOT would provide just compensation in accordance with the Uniform Relocation

Act for the property to be acquired. If landowners believe that the offer for their property is unfair, an appeals process exists to resolve the differences about the value. The Uniform Relocation Act protect landowners from unfair and inequitable acquisition of property.

The build alternatives would displace 6 to 15 residences. Alternative 5A2B-2 would displace the Brewer Fence Company, Eden Pure Heaters, Mitchell's Landscaping & Garden Center, and Town 'N Country Apartments. Alternative 5B2B-2 would displace the Bangor Hydro-Electric Company building and a compressor station. Alternative 2B-2/the Preferred Alternative and Alternative 5B2B-2 would impact the Eastern Maine Healthcare parking lot (exhibit 3.37).

For Alternative 2B-2/the Preferred Alternative, the properties of those potentially displaced residents range from approximately 0.50 acre to 20.19 acres, with the majority between 2.0 and 4.0 acres. The assessed value of those potentially displaced properties and residences range from approximately \$50,000 to \$340,000, with the majority between approximately \$147,000 and \$323,000.

For Alternative 5A2B-2, the properties of those potentially displaced residents range from approximately 0.50 acre to 20.19 acres, with the majority between 2.0 and 4.0 acres. The assessed value of those potentially displaced properties and residences range from

**Exhibit 3.37 – Displacements**

	<i>Residences</i>	<i>Businesses</i>	<i>Business Impacts</i>
<b>No-Build</b>			
<b>2B-2/ the Preferred Alternative</b>	8		Eastern Maine Healthcare Parking Lot – 130 parking spaces (20 percent)
<b>5A2B-2</b>	15	Brewer Fence Company, Eden Pure Heaters, Mitchell's Landscaping & Garden Center, and Town 'N Country Apartments	
<b>5B2B-2</b>	6	Bangor Hydro-Electric Co. Building, and Maritimes and Northeast Pipeline LLC c/o Duke Energy Compressor Station	Eastern Maine Healthcare Parking Lot – 130 parking spaces (20 percent)

approximately \$50,000 to \$340,000, with the majority between approximately \$147,000 and \$323,000.

For Alternative 5B2B-2, the properties of those potentially displaced residents range from approximately 0.50 acre to 20.19 acres, with the majority between 2.0 and 4.0 acres. The assessed value of those potentially displaced properties and residences range from approximately \$50,000 to \$340,000, with the majority between approximately \$124,000 and \$242,500.

MaineDOT performed an assessment for comparable replacement housing for those potentially displaced residents in February 2012 and concluded sufficient replacement housing exists in the area. In February 2012, there were approximately 100 homes of comparable size and price range for sale in the City of Brewer and the Towns of Holden and Eddington. When the Towns of Clifton and Dedham are also

### **3 • I-395/Route 9 Transportation Study Environmental Impact Statement**

considered, there were approximately 150 homes of comparable size and price range for sale.

Following the circulation of the DEIS/Section 404 permit application supporting information, MaineDOT would coordinate with those potentially displaced residents to determine special relocation considerations and any measures required to resolve relocation concerns.

Owners of the residences and/or commercial businesses would be relocated in the same general area, if desired and reasonably possible. Relocation assistance provided by the MaineDOT would include reimbursements of reasonable moving costs and settlement fees.

The No-Build Alternative would not impact local tax revenues.

The build alternatives would result in a reduction in tax revenue in Brewer, Holden, and Eddington because the land converted to transportation use would no longer be tax-eligible. Annual tax revenue would decrease by approximately:

- Alternative 2B-2/the Preferred Alternative
  - » Brewer: \$37,000
  - » Holden: \$7,200
  - » Eddington: \$17,800
- Alternative 5A2B-2
  - » Brewer: \$42,700
  - » Holden: \$19,100

- » Eddington: \$17,000
- Alternative 5B2B-2
  - » Brewer: \$159,200
  - » Holden: \$0
  - » Eddington: \$9,400

The decreases in revenue represent less than two percent of total tax revenues in each municipality.

#### **3.4.1.3 Future Land Use and Zoning**

The comprehensive plans for Brewer, Holden, and Eddington promote the expansion of commercial and residential uses in or near areas of existing development, development of supporting transportation networks, and the protection of open spaces.

Brewer's state-certified comprehensive plan was last revised in 1995. Brewer's Land Use Code was recently revised and amended to expand its subdivision regulations regarding open-space criteria, off-site open space, and fee in lieu of open-space requirements.

The city wants to bring the waterfront back to the center of economic and recreational activities as prior land-use patterns pushed development outside the original downtown. Planning goals identified by the city include development and maintenance of areas to walk and bike; more efficient use of the Penobscot River shoreland; and revitalization of Wilson Street and Main Street (two of the most visible downtown



streets), Day Road, Eastern Avenue, and Wiswell Road. Some commercial and professional development is expected along Route 1A and Eastern Avenue (The Trust for Public Land, 2009; City of Brewer, 1995).

Much of the land in the study area in Brewer is zoned for rural uses (exhibit 3.38). Most of the western portion of Brewer along the Penobscot River is zoned as medium- and low-density residential. General business areas are located along Route 1A and local roads (City of Brewer, 1995).

Holden's state-certified comprehensive plan was last revised in 2007. The town of Holden has a zoning ordinance and a subdivision ordinance to address open space and development. The town continues to face pressure to approve larger-scale developments than allowed in the limited commercial zone. According to the comprehensive plan, the zoning ordinance is wide-ranging but some changes were needed. Recommendations were to reduce lot sizes to encourage village-scale growth; alter the Community Service/Institutional zone because it was nearly the same as the Limited Commercial Zone; and create a mechanism to provide for well-planned, village development along the alignment of the highway selected from the I-395/Route 9 transportation study. Amendments to the zoning ordinance were made to reflect the comprehensive plan. The town passed a Conservation Subdivision Ordinance in April 2008 that requires 50

percent of lands designated for subdivision be set aside for open space (The Trust for Public Land, 2009).

Residential growth in Holden is expected throughout the rural areas of the town, particularly along Levenseller Road, Clark Hill Road, Mann Hill Road, Route 1A, and Wiswell Road (Town of Holden, 2007).

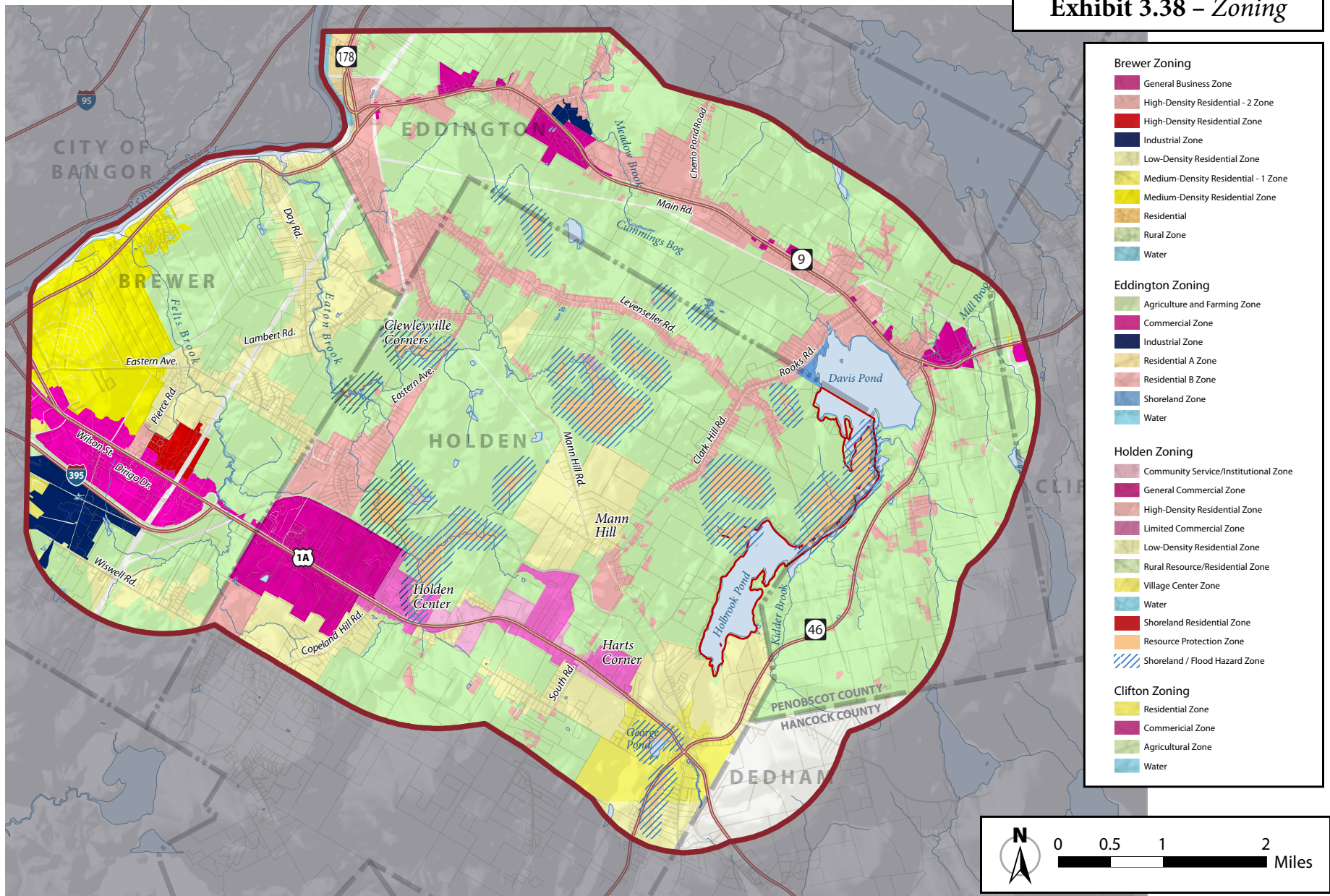
Most of the land in Holden is zoned rural resource and residential development (exhibit 3.39). Holden has some general and limited commercial zoning along Route 1A. Areas surrounding wetlands complexes are predominantly zoned as resource protection zones and shoreland/flood hazard zones. Areas surrounding Holbrook Pond and Davis Pond are zoned for shoreland residential development (Town of Holden, 2007).

Eddington has a state-certified comprehensive plan that was revised in 2002 and last updated in 2004. There are no restrictions, open-space set-asides, or limits on development. The Future Land Use Plan requires that new residential developments submit plans for open-space/recreational areas.

Eddington's comprehensive plan identifies the following goals: protect plant and wildlife habitats, ensure safe drinking water, replace malfunctioning septic tanks, manage development in floodplains, encourage protection of open space and water resources, and ensure that environmental resources are considered during the development review process (The Trust for Public Land, 2009).

### 3 • I-395/Route 9 Transportation Study Environmental Impact Statement

Exhibit 3.38 – Zoning



**Exhibit 3.39 – Impacts to Land Use with Zoning Designations (acres)**

	<i>Agriculture</i>	<i>Commercial</i>	<i>High-Density Residential</i>	<i>Medium-Density Residential</i>	<i>Low-Density/Rural Residential</i>	<i>Rural</i>	<i>Total<sup>1</sup></i>
<b>No-Build</b>							
<b>2B-2/the Preferred Alternative</b>	27	9	2	27	15	76	156
<b>5A2B-2</b>	28	18	2	29	17	112	206
<b>5B2B-2</b>	58	10	0	18	22	69	177

**Note:** <sup>1</sup> Total acres do not include area in infrastructure/utility zoning designations or surface water.

In the town of Eddington, a substantial increase is expected in residential subdivision development, particularly along Route 9. Utility upgrades are expected in the town, including gas and electric (Town of Eddington, 2007).

Most of the land in Eddington is zoned for agriculture and farming (exhibit 3.39). Areas zoned for residential and commercial uses exist along Route 9, Route 46, and other local roads (Town of Eddington, 2002).

Most of the land in Clifton is zoned as agriculture or rural resource. Growth is expected to occur in the industrial/commercial district, moderate-density district, and low-density district.

The No-Build Alternative would impact future land use and zoning. Future land use in the study area likely would consist of an extension of the existing permitted land uses and trends and the future land use plans identified in the Brewer, Holden, and Eddington comprehensive plans. Without relief of traffic congestion,

the No-Build Alternative likely would have an adverse impact on future business expansion and new development along Route 1A. With increased traffic volumes, the number of crashes experienced between vehicles entering and exiting businesses along Route 1A could increase.

Although a portion of the build alternatives would be in the limited commercial area along the Route 1A corridor, they are inconsistent with the comprehensive plans of Brewer, Holden, and Eddington because areas designated for rural resource/residential would be converted to transportation use (exhibit 3.39). Implementation of the build alternatives would detract from the rural character in the central and northern portions of the city of Brewer and the towns of Holden and Eddington.

By reducing traffic congestion, the build alternatives would have a beneficial impact on future business expansion and new development along Route 1A and, to a limited extent, along Route 9. The build

alternatives would benefit the land uses along Route 46 from reduced traffic.

#### **3.4.1.4 Communities and Neighborhoods**

A community is defined as a group of people living together because of geography, background, or heritage. Common heritage characteristics of community include race, ethnicity, and religion. Geographical characteristics of a community include central locations that foster a sense of collective identity (Garreau, 1991).

There are no communities identified in the local study area.

A neighborhood is defined as a group of people living in proximity to one another. Local roadways, topography, common lot or property size, and architecture help to define a neighborhood. Many small, well-defined neighborhoods are located in the study area (exhibit 3.40).

Brewer is part of the Bangor, Maine, metropolitan area and is divided into the villages of South Brewer and North Brewer. Neighborhoods along Eastern Avenue in Brewer are Felts Brook Green, Timber Ridge, Winter Way, and Beech Ridge. Nature's Way is located along Lambert Road (City of Brewer, 1995).

Route 1A divides the town of Holden into two parts: the southern portion and the northern portion. The neighborhoods in Holden are Barrett Lane along

Mann Hill Road; Brookfield Estates along Eastern Avenue; and the houses along Brian Drive, Eaton Ridge, and Gilmore Estates along South Road.

East Eddington exists within the town of Eddington. The neighborhoods are Rae Lorraine and Martin Lane along Main Road and Fifield Estates along Rooks Road. Residents along the primary roads in the study area also define themselves as neighborhoods.

The No-Build Alternative would impact community cohesion. The town of Holden reported that Route 1A, which bisects the town into southern and northern portions, acts as a physical barrier to community interaction. Increased congestion on Route 1A would increase this barrier effect.

The No-Build Alternative would not impact neighborhoods.

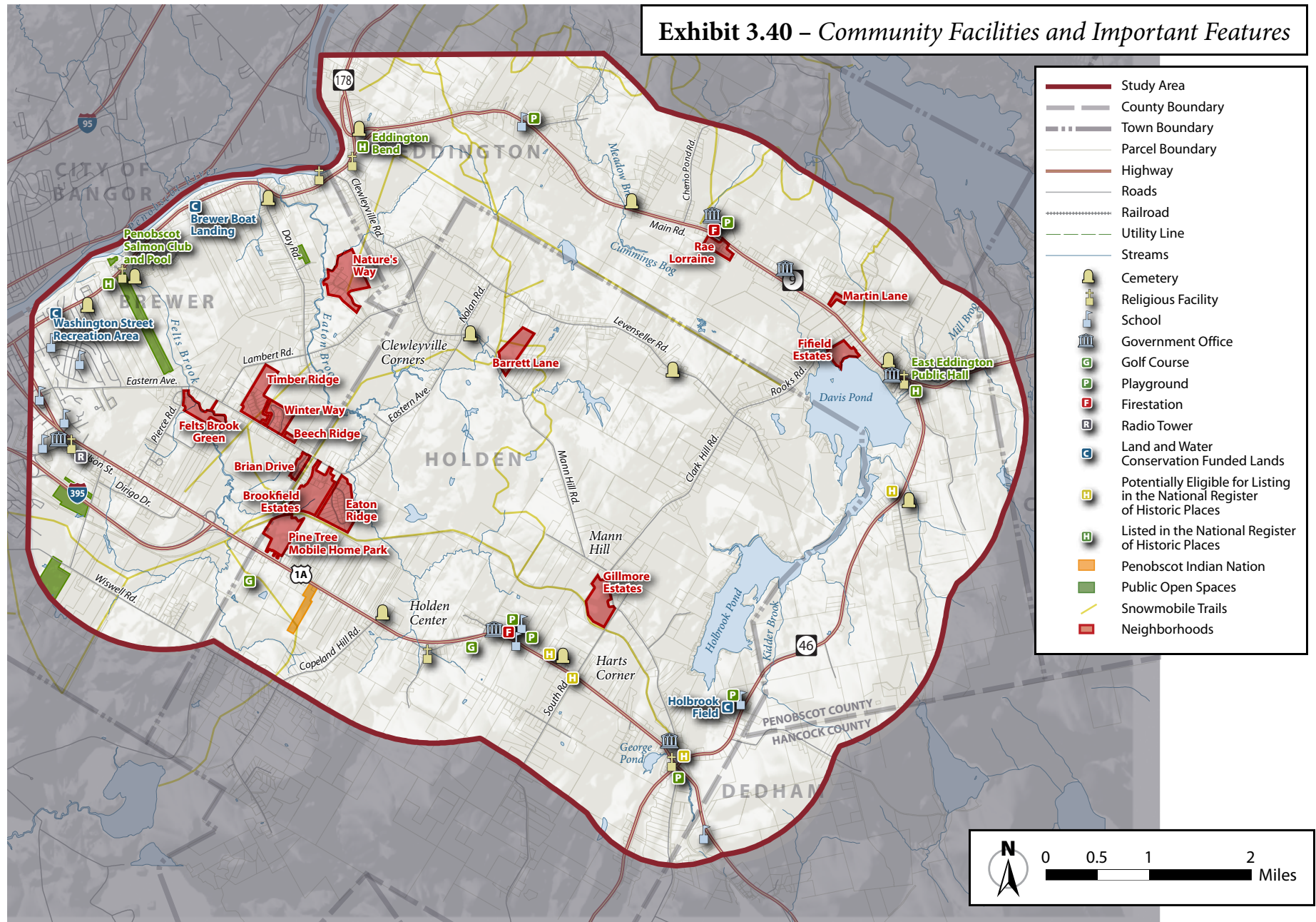
Alternative 2B-2/the Preferred Alternative and Alternative 5A2B-2 would bisect the five-lot Beech Ridge neighborhood in the city of Brewer (exhibit 3.41). These alternatives would be approximately 100 feet east of Winter Way. Alternative 5A2B-2 would be to the immediate west of the Pine Tree Mobile Home Park. Alternative 5B2B-2 would be to the immediate east of Felts Brook Green.

#### **3.4.1.5 Community Facilities and Services**

The educational facilities in Brewer are Brewer High School and the Brewer Community School (exhibit



**Exhibit 3.40 – Community Facilities and Important Features**



### 3 • I-395/Route 9 Transportation Study Environmental Impact Statement

Exhibit 3.41 – Impacts to Neighborhoods

	Felts Brook Green	Brookfield Estates	Pine Tree Mobile Home Park	Brian Drive	Beech Ridge	Easton Ridge	Winter Way	Timber Ridge	Nature's Way	Barrett Lane	Rae Lorraine	Martin Lane	Fifield Estates
No-Build													
2B-2/the Preferred Alternative													
5A2B-2													
5B2B-2													

**Legend:** Direct Impact Immediately Adjacent to Neighborhood Within 500 feet of Neighborhood

3.40). The educational facilities in Holden and Eddington are Holden Elementary School (grades K-4), Holbrook School (grades 5-8), and Eddington School (grades K-4) (Town of Holden, 2007).

Seven religious facilities are located in the study area: three in Brewer, two in Holden, and two in Eddington (exhibit 3.40).

Brewer's emergency facilities consist of full-time fire and police departments and rescue and ambulance services. Brewer has established mutual-aid agreements with Orrington, Eddington, Hampden, Holden, and Bangor when personnel or equipment is insufficient for firefighting. Brewer provides rescue services for Holden and Eddington (City of Brewer, 1995). A new public-safety building, which houses both police and fire services, was recently constructed on Parkway South, east of I-395 (City of Brewer, 2007). Emergency

facilities in Holden include the police department, volunteer fire department, and rescue squad, all of which are located in the municipal building on Route 1A (exhibit 3.40) (Town of Holden, 2007). Eddington's volunteer fire department is housed in the town office building on Route 9 (exhibit 3.40). The fire station was renovated in 2007 (Town of Eddington, 2007). Eddington employs two constables, who work in cooperation with the Penobscot County Sheriff's Department and the Maine State Police (Town of Eddington, 2002).

A cancer treatment center was built along Dirigo Drive in Brewer (City of Brewer, 2007).

The study area has 11 cemeteries: three in Brewer, six in Holden, and five in Eddington (exhibit 3.40).

Municipal-government services in Brewer include the Public Works Department, City Hall Water District Office, landfill, and wastewater treatment plant.

The Brewer armory is a state-owned facility and the post office is federally owned (City of Brewer, 1995). Municipal facilities in Holden include the municipal building and the Public Works Department (Town of Holden, 2007). Municipal facilities in Eddington include the municipal building (renovated in 2007) and the public hall (Town of Eddington, 2002). The MaineDOT owns and operates a maintenance facility along Route 9 in the eastern portion of the study area.

The No-Build Alternative would not impact educational facilities. Over time, increased traffic volumes and congestion could impact the safety of students traveling along Routes 1A, 9, and 46 in proximity to schools. In general, the build alternatives would have a positive impact on student safety by reducing through-traffic, including heavy-truck traffic, along school-bus routes. This benefit would be particularly evident on Route 46 (particularly the Holbrook School and Camp Roosevelt Scout Reservation along Route 46), given its terrain and more restricted sight distance. The build alternatives would increase traffic west of Eddington School.

The No-Build Alternative and the build alternatives would not impact religious facilities.

The No-Build Alternative would not impact emergency facilities. Over time, increased traffic volumes and congestion could impact response times of emergency responders.

The build alternatives would positively impact emergency facilities by reducing traffic along Route 1A and a corresponding decrease in emergency-vehicle response times. Emergency response services (e.g., fire, police, and ambulance) would benefit from a reduction in traffic congestion on Route 1A from the build alternatives.

The No-Build Alternative and Alternative 5A2B-2 would not impact healthcare facilities. Alternative 2B-2/the Preferred Alternative and Alternative 5B2B-2 would impact healthcare facilities by displacing approximately 20 percent of Eastern Maine Healthcare's parking lot. Functions performed by Eastern Maine Healthcare would not be impacted. During final design of the selected alternative, the MaineDOT would coordinate further with Eastern Maine Healthcare to replace the lost parking spaces.

The No-Build Alternative and the build alternatives would not impact cemeteries.

The No-Build Alternative and the build alternatives would not impact other governmental services.

### **3.4.1.6 Tribal Trust Lands**

There are no tribal trust lands located in the study area (NationalAtlas.gov, 2008). The Penobscot Indian Nation owns an approximate 25.8-acre property south of Route 1A which was acquired as an investment (exhibit 3.40) (Penobscot Indian Nation, 2008).



The No-Build Alternative and the build alternatives would not impact tribal trust lands.

#### **3.4.1.7 Farmlands, Prime and Unique Farmland Soils**

Limited active farmland exists in the study area. The study area consists of approximately 38 farms, most of which have 50 acres or less devoted to cropland. Most farms consist of a combination of pasture and woodland. The principal crops grown in the study area are strawberries and wild blueberries. Nursery and greenhouse products and hay, alfalfa, and other small grains are also locally important agricultural commodities. Of the approximate 38 farm operators in the study area, only eight list farming as their primary occupation; 30 have other principal occupations; and 29 farm operators earn less than \$10,000 a year from the sale of agricultural products (USDA, National Agriculture Statistics Service, 2004).

Prime farmland soils and soils of statewide importance in the study area are located mainly in Brewer and along I-395, Route 9, and Route 1A (section 3.1.1.2).

The No-Build Alternative would not impact existing farm operations, prime farmland soil, or farmland soils of statewide importance.

The build alternatives would impact soils (section 3.1.1.2).

In accordance with the FPPA of 1981 [7 USC 4202 Section 1541 (b)], the impact of the conversion of farmland to nonagricultural uses was considered and coordinated with the USDA's NRCS for Penobscot County. Form NRCS-CPA-106 was completed. The build alternatives result in scores from 49 to 57 of a possible 260. Because the scores for the build alternatives are less than 160, no further coordination is required to demonstrate compliance with the FPPA (section 3.1.1.2).

#### **3.4.2 Uncontrolled Petroleum and Potential Areas of Hazardous Wastes**

An assessment of potential uncontrolled petroleum and hazardous wastes in the study area was conducted (MaineDOT, 2001, 2008c). The purposes of the assessment were to identify areas of known or potential environmental impacts to soil and groundwater and to evaluate the possible effect of these locations on development of the alternatives. A secondary purpose of the assessment was to obtain information for the design phase of the project to guide future subsurface explorations to specific areas with potential or known soil and groundwater contamination. Future subsurface explorations would define the location, type, and concentration of contaminants that could adversely impact land-acquisition costs, design elements, construction expenses, and worker health and safety.

Soil and/or groundwater contamination by petroleum or hazardous substances likely exists at 21 known and 23 potential sites (exhibit 3.42). Known spills consist of kerosene, diesel fuel, leaded gasoline, fuel oil, motor oil, and other hazardous materials. Most of the spill locations are in the city of Brewer (MaineDOT, 2008c).

The No-Build Alternative and the build alternatives would not impact sites containing uncontrolled petroleum and hazardous wastes.

### ***3.4.3 Cultural Resources***

Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, requires that federal actions be reviewed for their impact on potentially significant historic resources. The term “historic” consists of architectural and archeological resources. A significant historic resource is one that is either listed or determined eligible for listing on the National Register of Historic Places (NRHP).

Section 110 of the NHPA outlines the review criteria for historic properties determined to be National Historic Landmarks – an elevated designation that indicates the property is of national importance – and that may be adversely affected by a federal action.

#### **3.4.3.1 Architectural Resources**

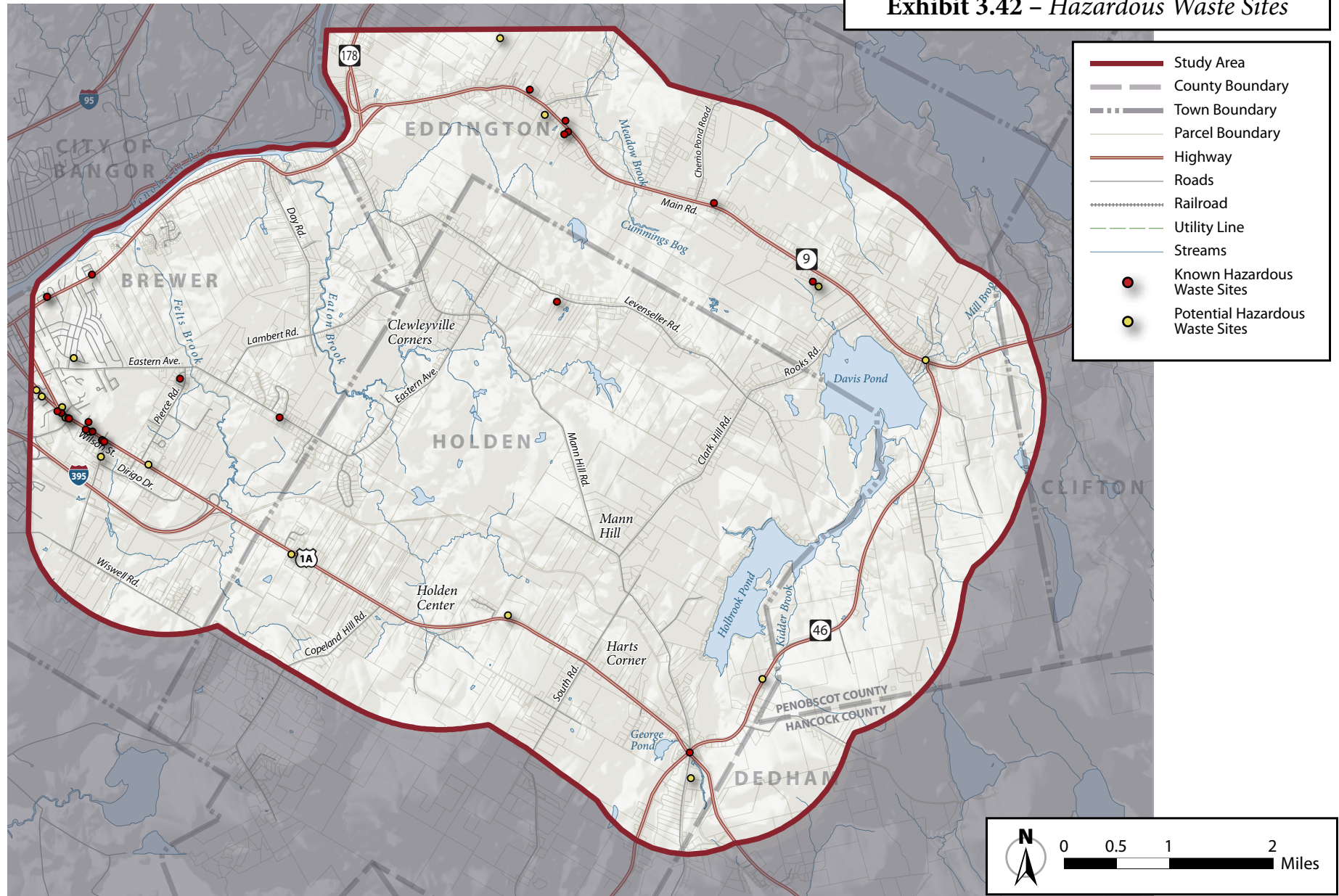
The study area has three resources listed on the NRHP: the Penobscot Salmon Club and Pool in North Brewer, East Eddington Public Hall, and Eddington Bend (Site 74-8) (exhibit 3.40) (National Park Service, 2008a).

The Penobscot Salmon Club and Pool was listed on the NRHP on September 15, 1976. The club was organized in 1884 as the first salmon club in the United States. The original clubhouse was built next to the Bangor Salmon Pool in 1887, which is where the building stood until it caught fire. The clubhouse was reconstructed in 1923 (NOAA, NMFS, and USFWS, 2009).

The East Eddington Public Hall was listed on the NRHP on January 24, 2004. It is located on Airline Road and is also known as Grange Hall or Cumins Hall. The hall was built in 1879, but the rear section was not completed until 1911. It has been used for events by the East Eddington Grange, Boy Scouts, town meetings, elections, dances, church suppers, reunions, and family events. Repairs and changes have taken place in recent years, beginning in the 1980s (Town of Eddington, 2002).

The Eddington Bend was listed on the NRHP on September 9, 1988. It is the sharp curve in the Penobscot River where Routes 9 and 178 intersect. The Eddington Bend is at the junction of the Old River Road,

Exhibit 3.42 – Hazardous Waste Sites



or Military Road, to Houlton and the Old Airline Stage Route to Aurora and Calais. Its historic function was agriculture/subsistence, domestic, camping, fishing, and graves or burials sites. Its current function is a forested landscape.

According to the Maine Historic Preservation Commission (MHPC), four individual structures and properties should be considered potentially eligible for listing on the NRHP (exhibit 3.40). They are located along Routes 1A and 46 in Holden and Eddington (i.e., 204-0004, 204-0009, 140-0027, and 140-0031) (Johnson, 2002).

Site 204-0004 is the Philander Pond House in Holden. It was built in 1863 and its primary use is commercial and trade. Site 204-0009 is the Rodney Pinkham House located in Holden. It was built in 1883 and is in good condition. Site 140-0027 is the Emery Ward House located in Eddington. It was built in 1846. Site 140-0031 is the Jonathan Sibley House in Holden. It was built in 1804 with the primary use of single-family residential and is in good condition (MHPC, 2009).

The No-Build Alternative would not impact historic resources listed or potentially eligible for listing on the NRHP.

According to the MHPC, the build alternatives would not impact historic resources listed or potentially eligible for listing on the NHRP (MHPC, 2005, 2011; Turk Tracey and Larry Architects, 2004).

#### **3.4.3.2 Archaeological Resources**

The MHPC conducted archaeological surveys of the study area in 2001 and 2007. The historic-period survey focused on locating, mapping, and archaeologically testing sites depicted on the 1859 and 1875 town maps and that appear in the study area. The purposes of the surveys were as follows:

- identify landforms that conform to prehistoric site-location models and test the most promising
- revisit previously identified archaeological sites and record their status
- find previously listed historic archaeological sites with unidentified locations

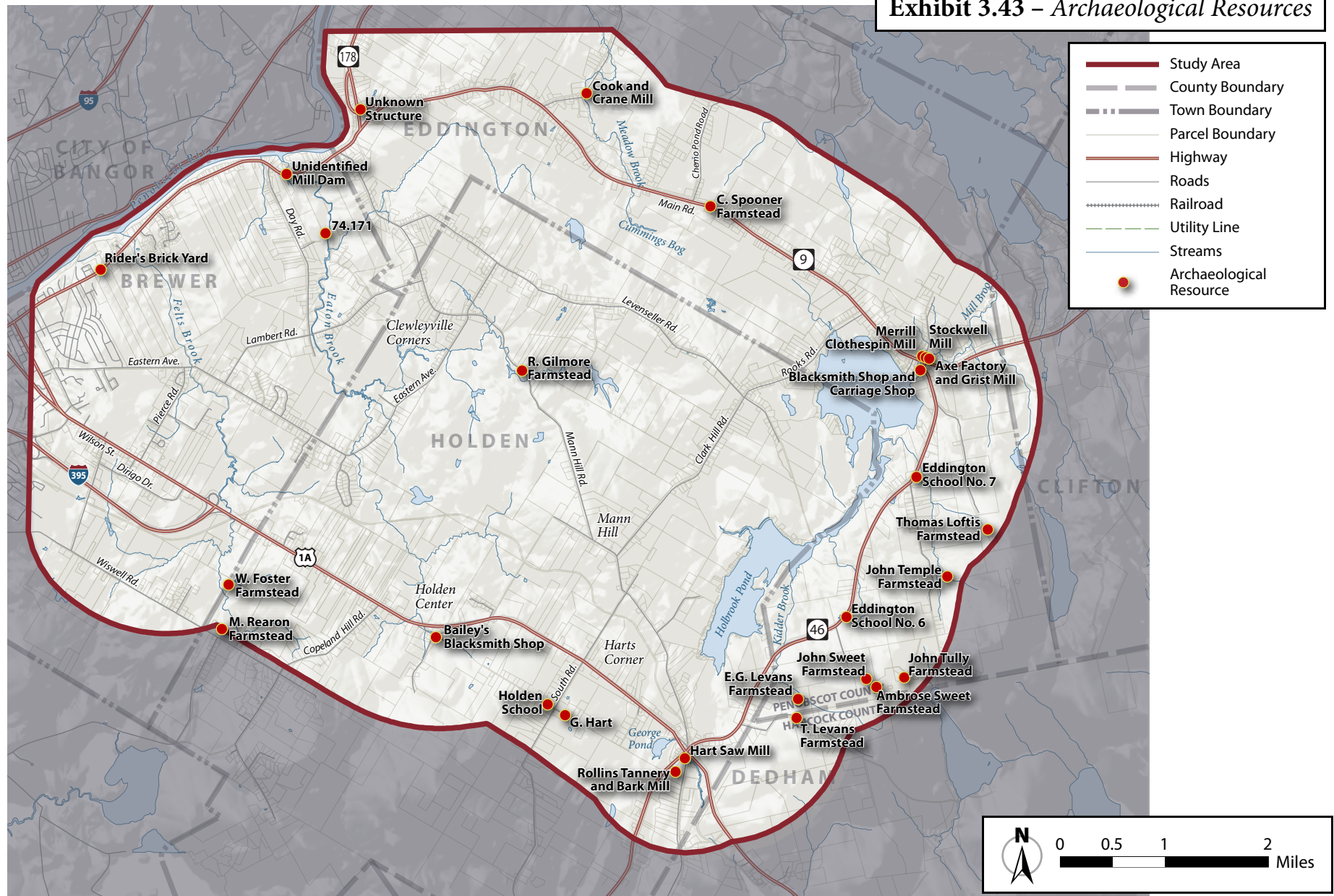
The surveys identified 28 sites, two of which are prehistoric sites (i.e., an encampment on Eaton Brook in Brewer and Site 74.171); the remainder (26 sites) are historic sites (exhibit 3.43).

The sites included 14 homesteads/farmsteads, seven mills, three schools, two blacksmith shops, a carriage shop, and a tannery (MHPC, 2007).

The No-Build Alternative and the build alternatives would not impact archaeological resources listed on or potentially eligible for listing on the NHRP (MHPC, 2011).



**Exhibit 3.43 – Archaeological Resources**



### **3.4.3.3 Traditional Cultural Properties**

No known traditional cultural properties exist in the study area (National Park Service, 2008a: NationalAtlas.gov, 2008).

The No-Build Alternative and the build alternatives would not impact traditional cultural properties.

### **3.4.4 Public Parks and Recreation Lands**

The Land and Water Conservation Fund (LWCF) was established to assist federal, state, and local governments in the acquisition and/or development of public outdoor recreation facilities. Administered at the federal level by the National Park Service (NPS) and at the state level by the Bureau of Parks and Lands in the Maine Department of Conservation (MDOC), LWCF grants can provide up to 50 percent of the allowable costs for approved acquisition or development projects.

Three outdoor recreation facilities in the study area were partially funded by the LWCF (exhibit 3.40): the Brewer Boat Landing, Washington Street Recreation Area in Brewer, and Holbrook Field in Holden are afforded consideration and protection by Section 6(f) (3) of the LWCF (16 USC 4601-4) (MDOC Grants and Community Recreation, 2001).

Brewer has a network of parks and playgrounds for the community's outdoor recreation needs. These consist of Creative Playground, Capri Street School,

Indian Trail Park, Washington Street School, Eastern Park, Pendleton Street School, Memorial Field and Track, School Street Playground, Maple Street Park, Fling Street Tot Lot, and Brewer Community School playground. Brewer's most recent comprehensive plan sets a goal to develop pathways along the Penobscot and Calais rail line and trails along feeder streams. The city recently approved preservation of a ten-acre neighborhood parcel as open space, and a nature trail was created on the property. City officials and the Brewer Land Trust are considering other trail connections with the goal of providing a network of interconnected trails (The Trust for Public Land, 2009).

Holden has no public parks. Holden formed a committee to lead the development of an open-space plan that will outline the vision, priorities, and strategies for parks, trails, recreation, and conservation for the community in the next 20 years. The Maine Audubon Center and the Holden Community Learning Nature Trails are the only public-use trails in Holden (The Trust for Public Land, 2009).

Recreational facilities consist of school basketball, baseball, and soccer fields at the public schools. Holden has a community playground at Holden Elementary School (Town of Holden, 2007).

Eddington has no public parks (Town of Eddington, 2002). Blackcap Mountain is a recreational area to the east of Route 46 in the town of Eddington.

Public recreational facilities in Eddington are a ballpark and a skating rink. The ballpark is rarely used and the rink is not municipally maintained. There are two campgrounds: Deans Landing on Chemo Pond with beach access and Greenwood Acres on Route 178, which has a public pool. Residents have expressed an interest in walking and bike trails.

Part of Maine's Interconnected Trail System for snowmobiles crosses through Brewer and Holden (exhibit 3.40) (Maine Snowmobile Association, 2008).

The No-Build Alternative and the build alternatives would not impact public parks, recreation lands, or other lands or facilities afforded consideration and protection under Section 4(f) of the USDOT Act of 1966 or Section 6(f)(3) of the LWCF.

The build alternatives would cross snowmobile trails maintained by the Eastern Maine Snowmobile Association (MSA) in three to six locations. Alternative 2B-2/the Preferred Alternative would have the least impacts to snowmobile trails by crossing the trails three times, Alternative 5A2B-2 would cross them six times, and Alternative 5B2B-2 would cross them five times. During final design of the selected alternative, the MaineDOT would evaluate options for maintaining the integrity of the existing snowmobile trail system.

#### ***3.4.5 Social and Economic Environment***

##### **3.4.5.1 Population, Demographics, and Labor Force**

The U.S. Census Bureau prepares annual estimates of total population for states, counties, and all other units of general-purpose government. In 2010, the Penobscot County population accounted for approximately 11.6 percent of Maine's population (i.e., 153,923 of 1,328,361). Penobscot County ranks third in population among Maine's 16 counties. The city of Brewer, with a population of 9,482, is the most populated municipality in the study area. The towns of Holden and Eddington have populations of 3,076 and 2,225, respectively (U.S. Census Bureau, 2010).

From 1970 to 2010, the population of both Holden and Eddington increased, whereas the population of Brewer remained relatively constant, with a slight increase in the 2000s (exhibit 3.44). Holden and Eddington experienced higher rates of population growth (67 and 64 percent, respectively) than Penobscot County (23 percent) and Maine as a whole (34 percent), and Brewer experienced a two percent increase (U.S. Census Bureau, 2000, 2010, and 1981).

The projected population for 2020 is expected to experience minor changes from existing levels. Population projections suggest that Penobscot County would experience growth of about 0.8 percent between 2005 and 2020 (approximately 1,100 persons). Brewer is

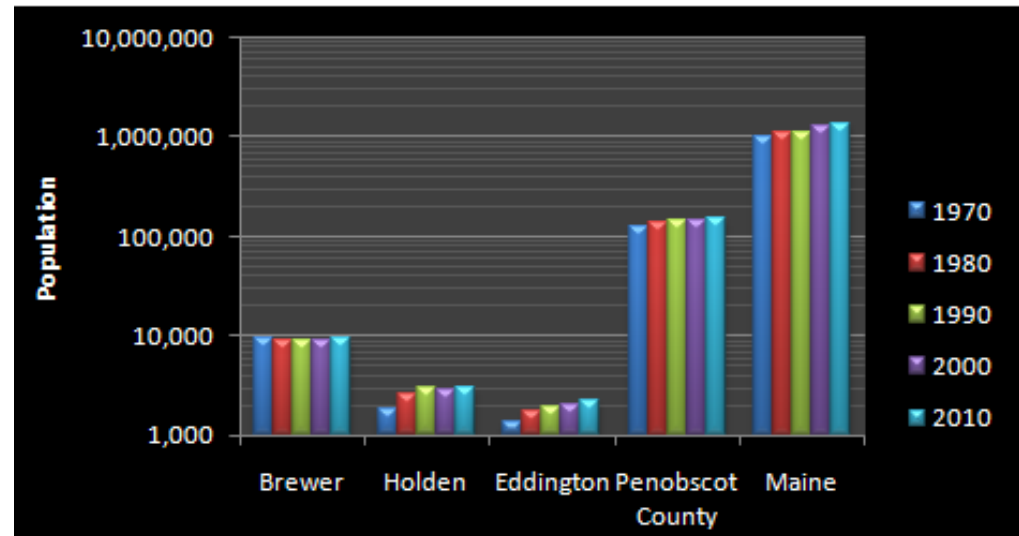


projected to experience a decrease of about 0.8 percent (approximately 71 fewer persons) by 2020. Holden is projected to experience an increase in population of about 8.0 percent (approximately 254 persons) by 2020. Eddington is projected to experience growth of about 5.7 percent (approximately 132 persons) by 2020 (Maine State Planning Office, 2008b).

Brewer, Holden, and Eddington have age distributions similar to Penobscot County and Maine (exhibit 3.45). The majority of the population in the study area is between the ages of 25 and 44. People in this age group are frequently engaged in forming new households and raising children. They are the basic segment of the population that comprises the local labor force, and they most frequently engage in home-buying or building. Approximately 51.1 percent of the population in the study area (7,182 persons) is female and approximately 48.9 percent (6,871 persons) is male. In comparison, approximately 48.7 percent of both Penobscot County and Maine is male (U.S. Census Bureau, 2009).

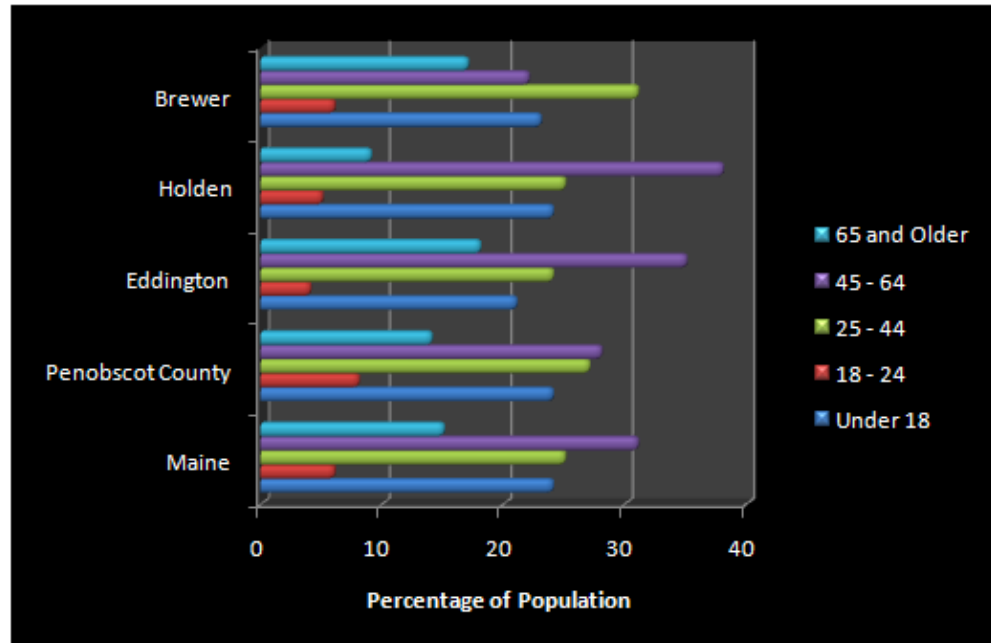
More than half of the residents in the study area are in the labor force (exhibit 3.46). Unemployment rates in the study area are slightly lower than those experienced by Penobscot County (8.3 percent) and Maine (7.9 percent). Unemployment rates for Holden (7.7 percent), Brewer (7.5 percent), and Eddington (7.0 percent) were lower than the Penobscot County

**Exhibit 3.44 – Population Growth**



Source: U.S. Census Bureau, 2010, 2000, and 1981

**Exhibit 3.45 – Age Distribution**



Source: U.S. Census Bureau, 2009

### 3 • I-395/Route 9 Transportation Study Environmental Impact Statement

**Exhibit 3.46 – Labor Force**

<i>Jurisdiction</i>	<i>2010 Population</i>	<i>Total Labor Force (Residents 16 Years of Age and Older)</i>	<i>Total Labor Force Employment</i>	<i>Percentage of Labor Force Unemployed</i>
<b>Brewer</b>	9,482	4,839	4,474	7.5%
<b>Holden</b>	3,076	1,685	1,555	7.7%
<b>Eddington</b>	2,225	1,320	1,227	7.0%
<b>Penobscot County</b>	153,923	78,210	71,740	8.3%
<b>Maine</b>	1,328,361	697,300	642,000	7.9%

*Sources: U.S. Census Bureau, 2010; MSPO, 2010*

**Exhibit 3.47 – Educational Attainment**

<i>Jurisdiction</i>	<i>Less Than 9th Grade</i>	<i>High School Graduate or Higher</i>	<i>Bachelor's Degree or Higher</i>
<b>Brewer</b>	1.9%	90.7%	26.5%
<b>Holden</b>	1.7%	94.4%	24.9%
<b>Eddington</b>	7.4%	86.8%	17.7%
<b>Penobscot County</b>	3.9%	89.2%	22.9%
<b>Maine</b>	4.0%	89.3%	26.1%

*Source: U.S. Census Bureau, 2009*

**Exhibit 3.48 – Income Levels**

<i>Jurisdiction</i>	<i>2009 Per Capita Income</i>	<i>2009 Median Household Income</i>
<b>Brewer</b>	\$24,941	\$43,292
<b>Holden</b>	\$30,427	\$50,150
<b>Eddington</b>	\$24,062	\$46,679
<b>Penobscot County</b>	\$22,813	\$42,366
<b>Maine</b>	\$24,980	\$46,541

*Source: U.S. Census Bureau, 2009*

and Maine unemployment rates (U.S. Census Bureau, 2009).

The No-Build Alternative and the build alternatives would not impact population, age and sex distribution, or the number of people in or composition of the labor force.

#### 3.4.5.2 Community Characteristics and Conditions

The educational attainment levels in Brewer and Holden are higher than the Penobscot County and Maine levels (90.7 and 94.4 percent, respectively; high school graduate or higher). The percentage of Eddington residents with high school diplomas (86.8 percent) is lower than Penobscot County and Maine levels (89.2 and 89.3 percent, respectively); the levels of post-high school educational attainment in Eddington are lower than those of the other municipalities, Penobscot County, and Maine (U.S. Census Bureau, 2009) (exhibit 3.47).

Per capita incomes in Holden are higher than Maine's level, whereas in Brewer and Eddington they are similar to Maine's level (exhibit 3.48). Median household incomes for Holden are higher in comparison to the median household income for Brewer, Eddington, Penobscot County, and Maine. Median household income in Brewer is slightly higher in comparison to Penobscot County and slightly lower

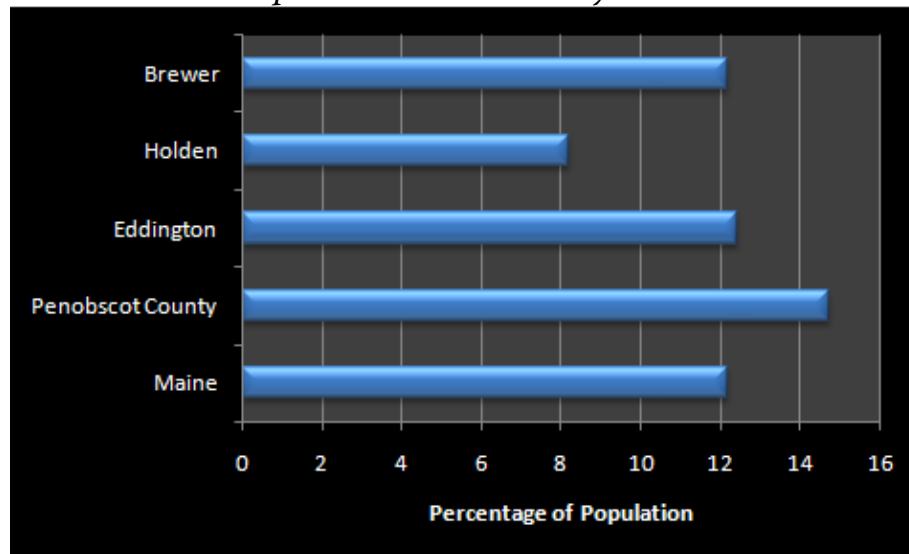
in comparison to Eddington and Maine (U.S. Census Bureau, 2009).

Holden has the highest income levels in the study area and the lowest proportion of people living below the poverty level (8.2 percent) (exhibit 3.49). In comparison, Brewer and Eddington have 12.2 and 12.4 percent living below the poverty level, respectively. The proportion of people in the study area living below the poverty level (10.9 percent) is lower than the levels in Penobscot County (14.7 percent) and Maine (12.2 percent) (U.S. Census Bureau, 2009).

Single-family homes are the predominant type of housing in the study area (exhibit 3.50). Holden and Eddington have a larger proportion of single-family homes (78.5 and 72.2 percent, respectively) compared to Penobscot County and Maine (63.5 and 68.9 percent, respectively), reflecting their rural/suburban character. Mobile homes and trailers constitute a larger portion of the available housing in Holden and Eddington (16.8 and 16.3 percent, respectively) than in Brewer (5.5 percent), and Brewer has a larger number of multifamily housing units (U.S. Census Bureau, 2009).

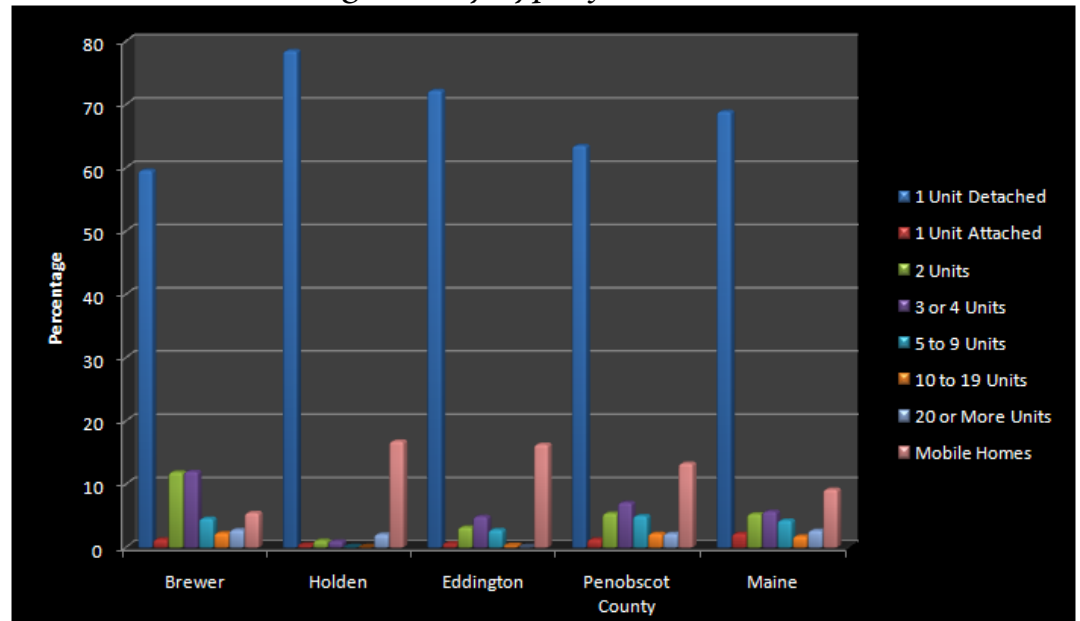
Median owner-occupied home values in Holden (\$152,800), Brewer (\$160,00), and Eddington (\$133,400) are higher than median home values in Penobscot County (\$126,400), whereas median home values in Maine (\$172,100) are higher than values in

**Exhibit 3.49 – Population Below Poverty Level**



Source: U.S. Census Bureau, 2009

**Exhibit 3.50 – Housing Units by Type of Structure**



Source: U.S. Census Bureau, 2009

the study area. The median rent for renter-occupied housing units in Eddington (\$801) is slightly higher than Penobscot County (\$643) and Maine (\$688) median rents. The median rents in both Holden (\$564) and Brewer (\$636) are comparable to those of Penobscot County and Maine (U.S. Census Bureau, 2009).

The No-Build Alternative and the build alternatives would not impact educational attainment.

The No-Build Alternative and the build alternatives would not impact per capita and median household income levels or the percentage of the population living below the poverty level.

The No-Build Alternative and the build alternatives would not impact the type and composition of housing; however, some houses would be displaced (section 3.4.1.1).

#### **3.4.5.3 Employment and Industry Trends**

The majority of residents in the labor force in the study area are employed in educational, health, and social services and retail trade (exhibit 3.51). Compared to Penobscot County and Maine, the three municipalities of Brewer, Holden, and Eddington have a greater percentage of employment in the retail sector (15.7 percent) and a lesser percentage in the manufacturing sector (7.1 percent) (U.S. Census Bureau, 2009). Penobscot County has 13.6 and 7.5 percent of the labor force employed in the retail trade and manufacturing

sectors, respectively. In comparison, Maine has 13.7 and 10.3 percent of the labor force employed in the retail trade and manufacturing sectors, respectively.

Penobscot County experienced a decline in manufacturing-sector employment from 1980 to 1990. In 1980, the manufacturing sector accounted for 25 percent of employment (14,006 jobs) (U.S. Census Bureau, 1981). By 1990, manufacturing-sector employment had decreased to 16 percent of total employment.

From 1990 to 2000, manufacturing-sector employment in Penobscot County continued to decline, decreasing from 16 percent in 1990 to 11.9 percent (8,308 persons) in 2000 and 7.5 percent (5,446 persons) in 2009. Maine experienced a similar trend from 19.0 percent in 1990 to 14.2 percent in 2000 to 10.3 percent in 2009 (U.S. Census Bureau, 2009).

The city of Brewer's economic base is a mix of manufacturing, healthcare professional centers, and retail. The largest employers are Eastern Maine Healthcare, Lemforder, Wal-Mart, and Cianbro Eastern Manufacturing Facility.

The largest employers in Holden are the school district, Holden Cabinet, Rhodes Lumber, and Granville Stone.

The Town of Eddington's economic base is mainly residential, serving as a bedroom community for Bangor and Brewer. The majority of businesses in Eddington are classified as small retail, service, construction,

and maintenance. The three largest employers are Commonsense Housing, Katahdin Scout Reservation, and New Hope Hospice. In 2002, the top three taxpayers were Maritimes and Northeast Pipeline Co., Inc., Bangor Hydro-Electric Company, and J. G. Faulkner (The Trust for Public Land, 2009).

The No-Build Alternative would not impact employment or industry trends in the study area or Penobscot County.

The build alternatives would not impact industry trends in the study area or Penobscot County.

Construction of one of the build alternatives would create direct, indirect, and induced employment. Direct employment includes workers employed at the highway construction site. Indirect employment includes off-site construction workers (e.g., administrative and clerical) and workers in construction supply industries (e.g., steel and cements products). Induced employment includes workers supported throughout

**Exhibit 3.51 – Employment by Industry**

	<i>Brewer</i>		<i>Holden</i>		<i>Eddington</i>		<i>Penobscot County</i>		<i>Maine</i>	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
<b>Agriculture, Forestry, Fishing and Hunting, and Mining</b>	60	1.3%	0	0	57	5.8%	1,634	2.3%	16,312	2.5%
<b>Construction</b>	319	6.6%	106	7.3%	104	10.6%	4,737	6.5%	52,201	8%
<b>Manufacturing</b>	268	5.6%	105	7.2%	83	8.4%	5,446	7.5%	67,501	10.3%
<b>Wholesale Trade</b>	237	4.9%	69	4.8%	0	0%	2,147	3%	18,312	2.8%
<b>Retail Trade</b>	738	15.4%	273	18.8%	156	15.9%	9,858	13.6%	89,747	13.7%
<b>Transportation and Warehousing, and Utilities</b>	273	5.7%	94	6.5%	74	7.5%	3,796	5.2%	26,636	4.1%
<b>Information</b>	75	1.6%	45	3.1%	17	1.7%	1,474	2%	13,488	2.1%
<b>Finance, Insurance, Real Estate, and Rental and Leasing</b>	370	7.7%	39	2.7%	82	8.3%	3,437	4.7%	40,372	6.2%
<b>Professional, Scientific, Management, Administrative, and Waste Management Services</b>	309	6.4%	71	4.9%	70	7.1%	4,817	6.6%	52,906	8.1%
<b>Educational, Health, and Social Services</b>	1,283	26.7%	339	27.5%	229	23.3%	23,500	32.4%	167,516	25.5%
<b>Arts, Entertainment, Recreation, Accommodation, and Food Services</b>	264	13%	70	4.8%	34	3.5%	5,515	7.6%	53,962	8.2%
<b>Public Administration</b>	97	2%	117	8.1%	19	1.9%	3,163	4.4%	30,174	4.6%
<b>Other Services</b>	144	4%	63	4.3%	58	5.9%	3,014	4.2%	27,284	4.2%

Source: U.S. Census Bureau, 2009

### **3 • I-395/Route 9 Transportation Study Environmental Impact Statement**

the economy when highway construction workers spend their wages (FHWA, 2008).

The FHWA estimates that for every \$1 million in highway infrastructure investment, approximately 28 full-time equivalent jobs are created. These jobs include approximately nine direct jobs, five indirect jobs, and 14 induced jobs (New England Council, 2008). This employment increase represents the total number of jobs created; although these jobs would not be created necessarily in Penobscot County, it is likely that a small increase in employment at the local and county levels would result.

Construction of the build alternatives would cost between \$61 million and \$81 million, creating approximately 1,700-2,300 full-time jobs.

#### **3.4.5.4 Retail Businesses**

The No-Build Alternative would adversely impact retail businesses along Route 1A. Traffic congestion, including travel-time delays and difficulty in left-turning movements, adversely affects customers' ability to access and exit businesses along Route 1A. Over time, as congestion worsens, customers may avoid patronizing some businesses along Route 1A.

Although motorists could continue to use the existing roads and travel patterns, the build alternatives would provide an opportunity or choice for travelers to bypass businesses along Route 1A in Holden and

Route 9 in Eddington, thereby potentially reducing impulse purchases.

A literature review summarizing the effects of bypasses on communities was compiled. The reviewed research included studies of more than 270 bypassed communities with varying size, demographic composition, and economic characteristics. It was conducted in 1996 by the National Cooperative Highway Research Program (NCHRP), University of Kansas, Washington State University, University of Texas at Austin, and both the Wisconsin and Iowa Departments of Transportation. Data collected ranged from interviews concerning local opinions to origin/destination surveys to statistical analyses and economic impact modeling. The studies summarized in the literature review found that the majority of bypassed towns do not suffer adverse economic impacts from a bypass. According to the studies, a bypass can cause negative impacts to traveler-oriented businesses in a community, but the probable likelihood and severity of these negative impacts differed among studies. More recent studies indicate similar findings (Babcock and Davalos, 2004).

A bypass can result in decreased business for some local businesses, particularly traveler-oriented businesses in communities with populations of fewer than 1,000 people. However, adverse effects do not occur in most traveler-oriented businesses. Sales at

traffic-serving businesses along the bypassed route declined in less than 30 percent of cases studied (Buffington et al., 1996).

In 64 percent of cases studied by the NCHRP, overall business activity grows more rapidly where bypasses have been constructed than in comparable “control” communities that are not bypassed (Buffington et al., 1996). Some of this growth may be a reason for construction of the bypass rather than an effect of the bypass.

The Oklahoma DOT (2001) assessed the impact of bypasses on small Oklahoma towns located along U.S. Highway 70. Much of the study was devoted to the development of models to analyze the impact of bypasses; the application of the model to Oklahoma towns with bypasses was limited. The authors concluded that the bypasses did not have a statistically significant impact on the sales-tax base in the affected towns (Rogers and Marshment, 2001).

In nearly all of the communities studied by the NCHRP, the amount of land in commercial or industrial use increased along existing routes (i.e., in 93 of 98 cases) (Buffington et al., 1996). Land values were found to increase along the original route in 47 of the 50 cases studied by the NCHRP; the rates of decline were no greater than 2.4 percent for the remaining three cases (Buffington et al., 1996).

According to the University of Texas at Austin study, negative impacts to traveler-oriented industry sectors begin when certain critical values of traffic reduction are reached: 31 percent for retail sales, 26 percent for eating and drinking places, and 43 percent for service industries. Gasoline service stations are negatively impacted regardless of the level of traffic loss (a finding qualitatively supported in the majority of studies).

The Iowa DOT, Wisconsin DOT, and Washington State University also highlighted the beneficial impact of reduced traffic congestion on a bypassed route. The Iowa DOT found that due to the decrease in through traffic, traffic congestion, and crash rates along the bypassed route, the bypassed business district becomes a more comfortable and safer place to shop. The Wisconsin DOT found that bypasses improved overall accessibility to and from the bypassed communities. The Washington State University and University of Kansas found that bypass routes that improve access to major trading centers may increase economic development opportunities for small towns and increase basic industries present. Growth in basic industry has an indirect benefit on local retail sales and service industries.

Several studies found that signage may reduce the negative impact of a bypass to businesses. The University of Texas Center for Transportation Research states that signs are a simple but potentially effective technique for minimizing negative impacts of a bypass on



existing community businesses. The North Carolina Division of Community Assistance similarly noted in a 1991 report that adequate signage is important for minimizing negative impacts of a bypass (North Carolina Division of Community Assistance, 1991). Signage that informs through-travelers of a town's location, as well as businesses and points of interest, can increase the likelihood that travelers will stop.

The build alternatives would have a slight impact on retail businesses. The reduction of traffic along Routes 1A and 9 could cause a small decrease in sales and revenue for the commercial and retail businesses proportionate to the amount of long-distance through-traffic removed from these two highways. Traffic headed to Calais and the Canadian Maritime Provinces, especially truck-freight traffic, would use the build alternatives and bypass Route 1A and a portion of Route 9 in Brewer and Eddington. However, local commuters and tourists headed to destinations such as Acadia National Park would continue to use Route 1A, thereby providing sales and revenue opportunities for businesses. Convenience stores and gasoline service stations along Route 1A could experience a slight decrease in sales as a result of less through-traffic, but this decrease is not projected to substantially impact sales or revenue.

The studies summarized in the literature review found that the majority of bypassed towns do not

suffer adverse impacts. Holden and Eddington can be defined as medium-sized communities (i.e., 2,000 to 2,500 people) and Brewer can be defined as a larger community (i.e., more than 5,000 people). Results of the literature review indicate that traffic on the original route (bypassed) was greater than traffic on the bypass for medium and larger communities, which supports the conclusion that traveler- and traffic-oriented businesses along Routes 1A and 9 in Brewer and Eddington would experience few adverse impacts (i.e., loss of sales) from the build alternatives. Results of the literature review also indicate that the majority of retail businesses had not moved from their pre-bypass locations, which suggests that most of the retail businesses along Routes 1A and 9 likely would not relocate.

The removal of a substantial portion of heavy-truck traffic and other through-traffic along Route 1A and a portion of Route 9 in Brewer and Eddington would improve access safety and reduce traffic congestion for customers of businesses along these two highways.

#### ***3.4.6 Minority and Disadvantaged Populations***

Racial diversity in the study area is low. Approximately two percent of the approximately 14,783 people living in the study area are non-white. Minorities comprise the following approximate percentages of

population: Black and African American, 0.6 percent; American Indian and Alaskan Native, 0.6 percent; Asian, 0.7 percent; Native Hawaiian and Other Pacific Islander, 0.01 percent; Other Race, 0.2 percent; and Two or More Races, 1.5 percent. No concentrated populations of racial minorities are known to reside in the study area (U.S. Census Bureau, 2010).

The percentage of people in Holden (8.2 percent), Brewer (12.2 percent), and Eddington (12.4 percent) living below the poverty level is relatively the same or lower than in Maine (12.2 percent) and lower than in Penobscot County (14.7 percent). Eddington has the largest percentage of people living below the poverty level in the study area (U.S. Census Bureau, 2009).

The study area has low-income and/or subsidized housing. The city of Brewer has approximately 367 government-subsidized apartments (City of Brewer, 1995). This housing is equally divided between public-housing apartments and assistance for living in private apartments (i.e., Section 8), and housing for elderly people and families. Holden has one low-income housing facility, Holden Square Apartments, and a youth group home, Harrington House (Town of Holden, 2007). There are no low-income housing facilities in Eddington.

In accordance with Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,”

and subsequent procedures developed by the USDOT, activities that have the potential to generate a disproportionately high and adverse effect on human health or the environment shall include explicit consideration of their effects on minority and low-income populations. In making an assessment of whether environmental justice has been served, information regarding race, color, or national origin and income level should be obtained where relevant, appropriate, and practical. Specific consideration should be given to those populations that are most directly served or affected by the proposed action.

The No-Build Alternative and the build alternatives would not result in discriminatory or disproportionate high and adverse impacts to minority or low-income populations.

### **3.5 Relationship between Short-Term Uses of the Human Environment and Enhancement of Long-Term Productivity**

The No-Build Alternative would have a short-term impact on the human environment from regular maintenance of I-395 and Routes 1A, 46, and 9. The No-Build Alternative would have a detrimental impact on long-term productivity on the environment of the study area and region because increasing traffic congestion would lead to an increased congestion and

decreased mobility for travelers on Routes 1A, 46, and 9 over the long term.

The build alternatives would have a short-term adverse impact on the human environment but would enhance long-term productivity. The proposed transportation improvements are based on the State of Maine's long-term transportation improvement plan and program, which considers the need for present and future connectivity and traffic requirements within the context of present and future land-use development. The build alternatives are generally similar and would have similar short-term impacts. Short-term uses of the human environment would occur during construction. A build alternative would require staging areas, stockpiling areas, roadway construction, and a temporary increase in traffic around construction areas. Additional short-term impacts would be air-quality degradation from increased emissions from construction activities, noise impacts, and socioeconomic and community impacts from construction effects (e.g., roadway obstruction, traffic detours, and construction debris).

Transportation projects consider state and local comprehensive plans, which acknowledge the present and future traffic requirements based on current and future land-use development. The purpose of the build alternatives is to increase long-term productivity. The projected reduction in traffic congestion on Routes

1A, 46, and 9 and the resulting savings in VHT show that the local short-term impacts and use of resources by the proposed action are consistent with the maintenance and enhancement of long-term productivity in the study area.

The build alternatives would assist in improving the long-term regional connectivity, as well as productivity of DownEast Maine by linking I-395 and Routes 1A, 46, and 9.

### **3.6 Irreversible and Irretrievable Commitment of Resources**

Implementation of the build alternatives entails a commitment of a range of natural, physical, human, and fiscal resources. The commitment of these resources generally would be similar for each of the build alternatives. Land acquired in the construction of a build alternative is considered an irreversible commitment during the period that it is used for a highway facility. However, if a greater need arises for use of the land or if the highway facility is no longer needed, the land can be converted to another use. There is no reason to believe that such a conversion would ever be necessary or desirable.

Considerable amounts of fossil fuels, labor, and highway-construction materials (e.g., cement, aggregate, and bituminous material) would be expended

during construction. Additionally, labor and natural resources would be used in the fabrication and preparation of construction materials. These materials generally are not retrievable. However, they are not in short supply and their use would not have an adverse effect on continued availability of these resources. Any construction will also require a substantial one-time expenditure of both state and federal funds that are not retrievable.

The commitment of these resources is based on the concept that residents in the immediate area, state, and region would benefit from the improved quality of the transportation system. The benefits would consist of improved mobility and safety and savings in time.

## **3.7 Indirect Impacts and Cumulative Impacts**

### **3.7.1 Indirect Impacts**

Indirect (or secondary) impacts are defined as reasonably foreseeable future consequences to the environment that are caused by the proposed action but that would occur either in the future (i.e., later in time) or in the vicinity of but not at the exact location as direct impacts associated with the build alternative. In the CEQ regulations, indirect impacts are defined as those that are "...caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect impacts

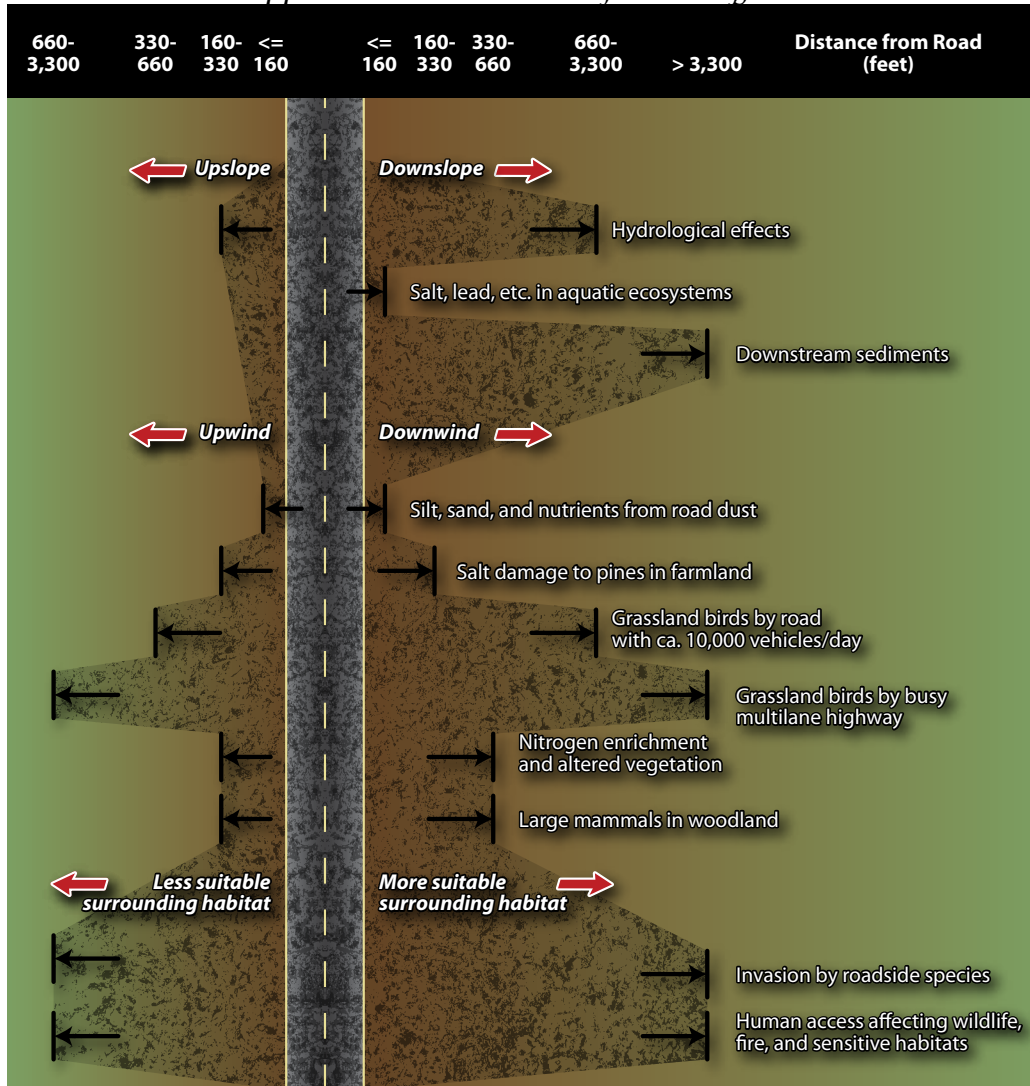
include growth-inducing impacts and other impacts related to induced changes in the pattern of land use, population density or growth rate, and related impacts on air and water and other natural systems, including ecosystems" (40 CFR 1508.8b).

Traffic noise, visual disturbance, chemicals, and pollutants create indirect impacts particularly to aquatic systems, wildlife, and wildlife habitat (Maine Audubon Society, 2007) (exhibit 3.52). The build alternatives create a road-effect zone in which indirect impacts extend beyond the road and the immediate surrounding areas (exhibit 3.53). Distances of indirect impacts to the natural environment were based on these road-effect zones and the USACE *New England District Compensatory Mitigation Guidance*. Distances used to analyze indirect impacts were based on the minimum distance for that resource (Maine Audubon Society, 2007; USACE, 2010), with the exception of resources with distances of zero to 160, in which 160 was used. Wetlands and vernal-pool impacts were based on the indirect impact distances in the USACE's mitigation guidance.

**Soils.** Indirect impacts of the build alternatives on soils would vary in scale depending on the selected alternative. Changes to soil in specific areas would impact soil-dependent species (i.e., vegetation and wildlife). Erosion from cut slopes would affect water

### 3 • I-395/Route 9 Transportation Study Environmental Impact Statement

**Exhibit 3.52 – Approximate Distances of Road-Effect Zones**



Source: Maine Audubon Society, 2007

quality in surface waters during and after construction. Erosion and sedimentation control measures would be incorporated into the design and implemented during construction in accordance with Section II of the MaineDOT's Best Management Practices Manual for Erosion and Sedimentation Control (MaineDOT, 2008a). Redundancy of controls would be included in each watershed that would be impacted to minimize potential control failures that could deliver sediment-laden runoff to streams during and after construction.

**Surface Waters.** An increase in the potential for sediment loading and roadway contaminants introduced to surface waters exists for the No-Build Alternative and the build alternatives. Impacts from sedimentation caused by construction would be temporary. During final design, a highway drainage system would be designed to minimize the transport of sediments and other particulates to surface waters. Erosion and sedimentation control measures would be incorporated into the design and implemented during construction in accordance with Section II of the MaineDOT's *Best Management Practices Manual for Erosion and Sedimentation Control* (MaineDOT, 2008a) and designed in accordance with the MDEP/MaineDOT Memorandum of Agreement, Stormwater Management, November 14, 2007 and Chapter 500 Rules. Redundancy of controls would be included in

**Exhibit 3.53 – Indirect Impacts of Alternatives**

Resources		Distances (feet)				Alternative Indirect Impacts (acres)					
		Upslope/ Upwind	Downslope/ Downwind	No-Build Alternative <sup>3</sup> Upslope	No-Build Alternative <sup>3</sup> Downslope	2B-2/the Preferred Alternative Upslope	2B-2/the Preferred Alternative Downslope	5A2B-2 Upslope	5A2B-2 Downslope	5B2B-2 Upslope	5B2B-2 Downslope
Soils		Erosion could affect water quality in surface waters.									
Surface Waters	Contaminants	160 <sup>1</sup>		0.7		1.8		1.5		2.0	
	Sediments	0 <sup>1</sup>	3,300 <sup>1</sup>	12		0	13	0	18	0	17
Groundwater		No indirect impacts									
Aquatic Habitat and Fisheries		160 <sup>1</sup>		0.7		1.8		1.5		2	
Vernal Pools	Area	250 <sup>2</sup>		54		17		25		8	
	Percent Forested			46%		60%		78%		83%	
	Area	750 <sup>2</sup>		480		278		395		146	
	Percent Forested			53%		63%		59%		69%	
Floodplains		0	100 <sup>4</sup>	0	1	0	11	0	5	0	15
		160 <sup>1</sup>		4		22		8		28	
Wetlands		0	100 <sup>4</sup>	0	17	0	31	0	34	0	30
		160 <sup>1</sup>		64		66		71		80	
Vegetation	Contaminants	160 <sup>1</sup>		164		232		252		202	
	Nitrogen enrichment and altered vegetation	160 <sup>1</sup>	330 <sup>1</sup>	95	187	88	292	92	312	116	240
	Invasive species	660 <sup>1</sup>	3,300 <sup>1</sup>	753	3,920	329	4,407	398	4,346	498	2,944
Wildlife	Large mammals	160 <sup>1</sup>	330 <sup>1</sup>	0	0	74	128	69	173	89	103
	Grassland birds	330 <sup>1</sup>	660 <sup>1</sup>	0	80	146	250	136	334	178	204
	IWWH	0	100 <sup>4</sup>	0	2	0	10	0	19	0	4
Wildlife Habitat		660 <sup>1</sup>	3,300 <sup>1</sup>	84	2,189	278	1,416	255	1,669	423	893

**Notes:**

<sup>1</sup>Source: Maine Audubon Society, "Conserving Wildlife On and Around Maine's Roads", 2007.

<sup>2</sup>Source: USACE, New England District, "Compensatory Mitigation Guidance", 2010.

<sup>3</sup>No-Build Alternative consisted of Route 1A from I-395 to Route 46, and Route 46 from Route 1A to Route 9.

<sup>4</sup>USEPA, 2010



each watershed that would be impacted to minimize potential control failures that could deliver sediment-laden runoff to streams.

As part of winter maintenance, anti-icing chemicals with chlorides (i.e., primarily rock salt) are used to combat the effects of snow, sleet, and ice. The amount of chlorides required is dependent primarily on the type of corridor, the desired LOS, the condition of the pavement, and the storm specifics (MaineDOT, 2012). Early application of salt brine and rock salt occurs on many roads to prevent snow and ice from bonding to the road surface. This approach requires less salt than to de-ice a road after packed snow and ice has bonded to it.

Salt from a highway is introduced into surface waters when:

- runoff occurs from highways and flows are carried into rivers and streams
- snow is plowed together with the salt, the accumulated pile on the roadside melts during warmer weather, and then runs off into rivers and streams

The use of anti-icing materials for winter maintenance would not impact the availability of potable water supplies. The MaineDOT continually investigates and evaluates snow and ice-control industry

standards and updates its salt-priority program in an effort to use salt judiciously while providing safe and effective traffic movement. In the unlikely event that a localized issue is observed, the MaineDOT would implement corrective actions as mandated by state law (23 MRSA § 652).

Anti-icing salts can impact groundwater in ways similar to surface waters.

**Aquatic Habitat and Fisheries.** Indirect impacts would result from the disruption of aquatic-organism passage. This may result in the reduction of upstream populations of stream-dependent organisms. Long-term impacts to the fisheries are not likely as long as aquatic-organism passage is maintained and best management practices are used to prevent short- and long-term erosion and sedimentation (MaineDOT, 2008a).

Potential erosion and sedimentation from construction of road-stream crossings would impact water quality and aquatic habitat and fisheries would occur within 160 feet. Erosion and sedimentation control measures would be incorporated into the design and implemented during construction in accordance with Section II of the MaineDOT's *Best Management Practices Manual for Erosion and Sedimentation Control* (MaineDOT, 2008a).



**Vernal Pools.** Amphibians commonly disperse more than 750 feet from a vernal pool into upland and wetland forested (generally) habitat. The NRPA rules (effective in September 2007) regulate a 250-foot critical habitat area around “significant” vernal pools. Each vernal pool was identified and analyzed with a uniform 250-foot and a 750-foot radius. Land area that would be removed within the 250-foot radius and 750-foot radius was considered an indirect impact.

**Floodplains and Wetlands.** Indirect impacts to floodplains and wetlands would occur at a certain distance from the edge of permanent disturbance (i.e., grading cut-and-fill boundary) necessary to construct the build alternatives. Within this area, changes in the value and/or function of wetlands would be altered due to changes in adjacent land use and topography.

The USACE recommendation for water quality-protection prescribes an effective area width of 100 feet, which provides adequate filtering of runoff to trap sediments and pollutants that affect water quality. The range of area width is tied to adjacent slopes, where for low to moderate slopes, the majority of effective filtering occurs within the first 30 feet.

The USACE recommendation for stabilization protection prescribes an effective area width of 30 to 65 feet. This width is generally adequate to attenuate

overland flow and regulate soil moisture-conditions to maintain adequate soil stability.

The build alternatives would indirectly impact between 66 and 80 acres of land within 160 feet of identified wetlands. Indirect impacts to wetlands would consist of changes to hydrology to existing wetlands, sediment input to wetlands adjacent to earthwork, and shading. Shading is most likely to occur where new bridges are constructed. Shading impacts to vegetation can reduce or eliminate wildlife habitat and water-quality functions. Wetlands that are not directly filled or excavated but in which their functions have been reduced are also indirect impacts. Habitat functions of wetlands can be indirectly impacted (see section 3.1.2.4).

**Vegetation.** Vegetation along existing and new highway right-of-ways tends to be disturbed and exhibit a higher percentage of exotic or invasive plant species. Roadways often introduce invasive plant species (e.g., purple loosestrife and Eurasian milfoil) that can degrade wildlife habitat. The build alternatives have the potential to introduce invasive species in areas previously vegetated with native species as well as nitrogen enrichment and altered vegetation. The build alternatives have the potential to introduce roadway contaminants (e.g., salt and lead) to vegetation. The build alternatives have an indirect impact of cover

type conversion along the right-of-way in excess of that needed for the roadway footprint. The operation of traffic on the build alternatives and maintenance of the right-of-way have the potential to alter the vegetation communities adjacent to it.

**Wildlife and Wildlife Habitat.** The types and number of animals killed by vehicles are related to road width, traffic volume, vehicle speed, and location of the road in terms of wildlife habitat, particularly travel corridors or migration habitat for particular species. Amphibians and reptiles have the highest mortality rates on two-lane roads with low to moderate amounts of traffic, whereas large and midsize mammals are more susceptible to collisions on two-lane, high-speed roads. Birds and smaller mammals are more at risk from collisions on wider, high-speed highways. In addition, roads through and adjacent to wetlands, ponds, and other waterways have some of the highest road-kill rates. Although wildlife–vehicle collisions do not put the health of large-mammal populations (e.g., deer and moose) at risk, these collisions pose a hazard for motorists (Maine Audubon Society, 2007).

Road salt, particularly sodium chloride, is toxic to many species of plants, fish, and other aquatic organisms. In addition, concentrations of salt along road-sides attract deer and moose, thereby increasing the risk of collisions with vehicles.

Other indirect impacts are wildlife avoidance of roads, which can indirectly affect dispersal and breeding behavior and noise disturbance for wildlife along the roads. Traffic noise can interfere with the ability of songbirds to hear mating calls and recognize warning calls. Because noise travels farther in open habitats, a decrease in population density adjacent to roads is greatest for grassland birds, less for birds in deciduous woods, and least for birds in coniferous woods. Researchers found that negative impacts on the density and nesting success of grassland birds extend more than a quarter-mile from a rural road and more than a half-mile from a highly traveled, four-lane highway (Maine Audubon Society, 2007).

Indirect impacts to wildlife habitat from the build alternatives are the creation of smaller undeveloped habitat blocks, which have value as roosting, foraging, or cover habitat for some species tolerant of disturbance (e.g., deer, raccoon, and certain birds).

Roads in or through a natural area result in the “edge effect,” thereby reducing its value for area-sensitive species. Where roads are built, habitat is lost or changed. In addition, roads increase human access to natural areas, resulting in increased human disturbance (Maine Audubon Society, 2007).

Chemicals introduced along roadways from vehicles, anti-icing salts, road-surface wear, and herbicide and pesticide use can pollute wildlife habitat by

providing a source of heavy metals, salt, organic pollutants, and excessive nutrients. Such water and soil pollution poses a lethal risk to wildlife that depends on the resources. Contamination of soil, plants, and animals extends as much as 66 feet from a road, and elevated levels of heavy metals often extend 650 feet or more from the road, occurring in greater concentrations along roads with high traffic volume.

**Land Use.** The No-Build Alternative would result in continued adverse impacts to land use. Over time, traffic volumes along Routes 1A, 9, and 46 through the study area would increase, resulting in longer delays and more congestion. As traffic volumes increase, more local traffic would divert to local roads seeking alternate routes to bypass the traffic congestion in and approaching the study area. Increasing traffic volumes on local roads would lead to more congestion and longer delays for motorists, as well as a general decrease in the quality of life. The increased congestion and delay would further exacerbate existing conditions that make it difficult for businesses to thrive and residents to travel unimpeded.

### 3.7.1.1 Induced Development or Growth

Another form of indirect impacts – induced development or growth – can be associated with the consequences of land-use development that would be

indirectly supported by changes in local access or mobility. Induced development would include a variety of alterations such as changes in land use, economic vitality, property value, and population density. The potential for indirect impacts to occur is determined in part by local land-use and development-planning objectives and the physical location of a proposed action.

The build alternatives would have controlled access, without access to local roads, except for the interchange at Route 1A near the Brewer–Holden boundary, and Route 9 east of Route 178 (Chapter 2).

Because the build alternatives are intended to serve long-distance through- and regional-traffic, development induced by them likely would be traveler-oriented businesses (e.g., commercial uses such as gasoline stations, hotels, restaurants, and convenience stores) within approximately a half-mile of the interchanges and intersections. Oregon DOT's *Guidebook for Evaluating the Indirect Land Use and Growth Impacts of Highway Improvements* recommends studying a half-mile radius surrounding a highway improvement as the primary area of induced growth (Oregon DOT, 2001). Assuming that induced development would occur within this distance, a worst-case analysis of land use was conducted for areas surrounding the proposed interchanges and intersection.

### **3 • I-395/Route 9 Transportation Study Environmental Impact Statement**

The purpose of a general business zone in Brewer is to provide for various types of commercial uses, including highway-oriented uses. This zone is intended to be the location of the community's major shopping facilities, including shopping centers. The purpose of the general business zone in Holden is to provide locations for business activities requiring large-scale buildings, large outdoor display and wholesale areas, and extensive site development to provide employment and services beyond the immediate neighborhood or community.

Land adjacent to the I-395 interchange with Route 1A used by Alternative 2B-2/the Preferred Alternative and Alternative 5B2B-2 is zoned general business and rural by the city of Brewer and the town of Holden. Land adjacent to the proposed interchange between Alternative 5A2B-2 and Route 1A is zoned rural and general commercial by the city of Brewer and the town of Holden.

The town of Eddington's commercial zone is intended primarily for commercial uses to which the public requires easy and frequent access. The residential B zone is established as a zone for residential use of existing housing and new multifamily housing. The agricultural zone is intended for the types of uses that traditionally predominate in rural Maine: forestry and farming, farm residences, and a scattering of varied

uses consistent with a generally open, nonintensive pattern of land use.

Land adjacent to the proposed intersection of Route 9 and the build alternatives is zoned commercial and residential B by the town of Eddington.

A build-out analysis was performed using the following method:

1. The geographic boundary for the analysis was an area within a half-mile of the interchange with Route 1A and the intersection with Route 9.
2. The lots that fall within that area were identified.
3. Lots that would not be built on (e.g., because they are too small or are wetlands) were removed from the analysis.
4. Zoning for each lot was identified.
5. The total number of structures permitted by the zoning ordinance was determined; existing structures were subtracted and the number of new structures were determined.
6. The lots, their land uses, and the number of acres most susceptible to secondary impacts from induced development were determined.
7. Only the parcels with road frontage were projected to be subdivided and built out.

Based on the analysis of the interchanges and intersection, each interchange could impact between 14 and 19 acres of forest and grassland areas in the general business zone in Brewer and Holden (exhibit 3.54). There may be some small impacts to wetlands in the future. The number of new businesses is unknown because the purpose of zoning is to provide for various commercial uses such as shopping facilities with an unknown number of businesses. The intersection could result in 16 new residences within a half-mile.

If induced development in the areas with the new interchanges and intersection was primarily commercial and traveler-oriented businesses, it would be generally consistent with existing land uses and zoning. The impacts to existing residential uses from induced development (if the existing uses are not converted to commercial or other use) would consist of an increase in the suburban character of the area from increased development, with the associated aesthetic impacts on neighboring residents.

Commercial and residential development would occur with the No-Build Alternative; however, it would occur more quickly with the build alternatives because of the strong connection between transportation and land use. Because commercial and residential development would occur without implementation of a build alternative, it would not be considered a secondary impact solely related to the build alternatives.

Other dynamic regional economic and development trends would have a more important influence on the establishment of those uses than construction of the build alternatives. The city of Brewer and the towns of Holden and Eddington would control new development in those areas through their planning and approval processes. Development would be guided by local comprehensive plans and zoning ordinances.

### ***3.7.2 Cumulative Impacts***

Consideration of cumulative effects entails an assessment of the total effect on a resource or ecosystem from past, present, and future actions that have altered

#### ***Exhibit 3.54 – Potential Induced Development by Alternative within a Half- Mile of Interchanges and Intersections***

<b><i>Interchange at Route 1A</i></b>		<b><i>Intersection at Route 9 between Chemo Pond and Davis Roads</i></b>
<b>No-Build</b>		
<b>2B-2/the Preferred Alternative</b>	Permitted uses within general business district (Approximately 19 acres forested and grassland)	16 Residences (16 acres forested and grassland)
<b>5A2B-2</b>	Permitted uses within general business district (Approximately 14 acres forested and grassland)	16 Residences (16 acres forested and grassland)
<b>5B2B-2</b>	Permitted uses within general business district (Approximately 19 acres forested and grassland)	16 Residences (16 acres forested and grassland)

### **3 • I-395/Route 9 Transportation Study Environmental Impact Statement**

the quantity, quality, or context of those resources within a broad geographic scope. Under the CEQ regulations, cumulative effects are defined as “...the impact on the environment which results from the incremental impact of the actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR 1508.7). The cumulative-effects analysis considers the aggregate effects of direct and indirect impacts – from federal, non-federal, public, or private actions – on the quality or quantity of a resource.

The intent of the cumulative-effects analysis is to determine the magnitude and significance of cumulative effects, both beneficial and adverse, and to determine the contribution of the proposed action to those aggregate effects. Contributions to cumulative effects from the build alternatives on resources is limited to those that are substantially impacted. Therefore, cumulative effects on the following resources were analyzed:

- surface waters and floodplains
- wetlands and aquatic habitat
- vegetation and wildlife

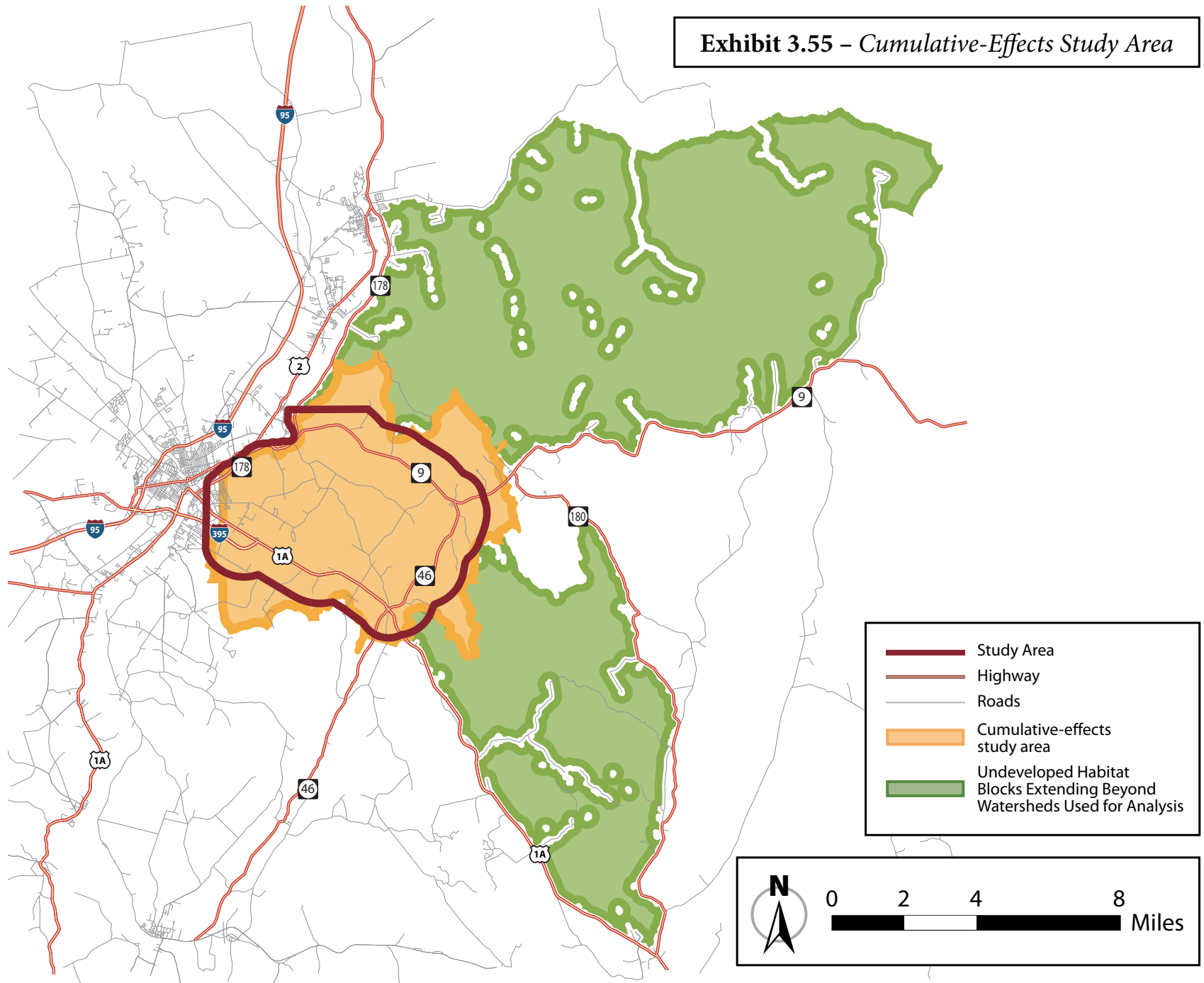
The cumulative impact of the proposed action to climate change was considered (section 3.2.1). Because the build alternatives would result in a slight reduction of CO<sub>2</sub> emissions, no further analysis was conducted.

The study area used to analyze cumulative effects was defined as the areas where past, present, or future actions would impact surface waters, floodplains, wetlands, and aquatic habitat. This area encompasses most of the city of Brewer and the towns of Holden and Eddington and includes small portions of the towns of Clifton, Dedham, Bradley, and Orrington. The study area used for the analysis of cumulative effects for these resources consisted of approximately 73 square miles (exhibit 3.55).

The year 1987 was used as the limit for the time-frame of past actions considered. It was chosen because it was the year that construction of the extension of I-395 from I-95 to Route 1A was completed and opened to traffic. The I-395 extension influenced the study area by providing easier regional access to Brewer, Holden, and Eddington. The 2035 design year of the build alternatives was used as the future limit for the cumulative-effects discussion.

The past, present, and reasonably foreseeable future actions in the study area were identified and the environmental consequences of these actions on the resources were analyzed (exhibit 3.56). Reasonably

**Exhibit 3.55 – Cumulative-Effects Study Area**





### 3 • I-395/Route 9 Transportation Study Environmental Impact Statement

#### Exhibit 3.56 – Cumulative Impacts

Past, Present, and Reasonably Foreseeable Actions	Direct Impacts				
	Surface Waters	Floodplains (acres)	Wetlands (acres)	Vegetation	Wildlife Habitat (acres)
<b>Past Actions 1987-2010</b>					
Extension of I-395 from Main Street, Bangor, to Route 1A, Brewer	200-foot impact to unnamed tributary to Felts Brook		Unknown	Conversion of 72 acres of rural land to transportation use	Unknown
Holden: Continued development of DeBeck Business Park (approximately 44-acre site)	Increase in impervious surfaces affecting stormwater runoff	5	3	Conversion of 6 acres of forests/vegetation land to commercial use	7
Brewer: Walmart Supercenter off of outer Wilson Street (approximately 3.6-acre site)			3		
Brewer: Construction of parallel service road along Wilson Street (Route 1A)			Unknown	Conversion of 10 acres of urban/suburban land to transportation	
Brewer: Penobscot Landing Trail preliminary engineering and right-of-way acquisition					
Brewer: Beech Ridge - approximately 4 residential lots (approximately 6.8-acre site)	Increase in impervious surfaces affecting stormwater runoff			Conversion of 8 acres of forests/vegetation land to residential use	
Brewer: Nature's Way - approximately 15 residential lots (approximately 93-acre site)	Increase in impervious surfaces affecting stormwater runoff; 332-foot impact to Eaton Brook and an unnamed tributary to Eaton Brook	3	11	Conversion of 31 acres of forests/vegetation land to residential use	
Brewer: Timber Ridge - approximately 19 residential lots (approximately 72.6-acre site)	Increase in impervious surfaces affecting stormwater runoff		2	Conversion of 19 acres of forests/vegetation land to residential use	
Brewer: Felts Brook Green Phase I - approximately 5 residential lots (approximately 6.5-acre site)	Increase in impervious surfaces affecting stormwater runoff; 218-foot impact to Felts Brook	1	1	Unknown	
Brewer: Lowe's Home and Garden Center on Wilson Street (approximately 4-acre site)	Increase in impervious surfaces affecting stormwater runoff			Conversion of 5 acres of forests/vegetation land to commercial use	16
Brewer: Diringo Drive Office Park Phase I - approximately 25.4-acre site.			20	Conversion of 23 acres of forests/vegetation land to commercial use	
Brewer/Holden: Bangor Hydro-electric Company Northeast Reliability Interconnect Electric Transmission Upgrade		1	8	Conversion of 18 acres of forests/vegetation land to utility use	21

**Exhibit 3.56 – Cumulative Impacts (continued)**

<i>Past, Present, and Reasonably Foreseeable Actions</i>	<i>Direct Impacts</i>				
	<i>Surface Waters</i>	<i>Floodplains (acres)</i>	<i>Wetlands (acres)</i>	<i>Vegetation</i>	<i>Wildlife Habitat (acres)</i>
Holden: Barrett Lane - approximately 9 residential lots (approximately 54.5-acre site)	Increase in impervious surfaces affecting stormwater runoff; 418-foot impact to unnamed tributary to Eaton Brook	2	19	Conversion of 54 acres of forests/vegetation land to residential use	
Holden: Brookfield Estates Phase I - approximately 16 residential lots (approximately 44.6-acre site)	Increase in impervious surfaces affecting stormwater runoff		4	Conversion of 42 acres of forests/vegetation land to residential use	
Holden: Gilmore Estates - approximately 6 residential lots (approximately 66-acre site)				Conversion of 43 acres of forests/vegetation land to residential use	
Eddington: Rae Lorraine - approximately 5 residential lots (approximately 27.3-acre site)			1	Conversion of 23 acres of forests/vegetation land to residential use	
Eddington: Martin Lane - approximately 5 residential lots (approximately 10.5-acre site)				Conversion of 7 acres of forests/vegetation land to residential use	
Eddington: Fifield Estates - approximately 8 residential lots (approximately 33.7-acre site)			20	Conversion of 32 acres of forests/vegetation land to residential use	
Holden: Natural Gas Compressor Station			Unknown	Unknown	
<b>Present Actions 2011-2015</b>					
Brewer: Brewer Professional Center - commercial and professional development (approximately 64.5 acres).	Increase in impervious surfaces affecting stormwater runoff		2	Conversion of 21 acres of forests/vegetation land to commercial use	
Brewer: Diringo Drive Office Park Phase II - commercial and professional development (Approximately 31.6 acres).			30	Conversion of 31 acres of forests/vegetation land to commercial use	
<b>Reasonably Foreseeable Actions 2015-2035</b>					
I-395 Connector - 2-Lane Highway: (2B-2/the Preferred Alternative, 5A2B-2, 5B2B-2)	Increase in impervious surfaces affecting stormwater runoff; 222- to 567-foot impact to surface water	2-11	26-32	Conversion of 14-20 acres of agricultural, 17-36 acres of grassland, and 71-85 acres of forests to transportation use	512-880
Improve the most heavily congested section of Route 1A from I-395 to Route 46 and the Intersection of Routes 46 and 9					

### 3 • I-395/Route 9 Transportation Study Environmental Impact Statement

#### Exhibit 3.56 – Cumulative Impacts (continued)

Past, Present, and Reasonably Foreseeable Actions	Direct Impacts				
	Surface Waters	Floodplains (acres)	Wetlands (acres)	Vegetation	Wildlife Habitat (acres)
Brewer: Feltsbrook Green Phase II (approximately 38.2-acre site)	Increase in impervious surfaces affecting stormwater runoff; 1,589-foot impact to Eaton Brook and an unnamed tributary to Eaton Brook	3	2	Conversion of 7 acres of forests/vegetation land to residential use	
Holden: Brookfield Estates Phase II (approximately 49.3-acre site)	Increase in impervious surfaces affecting stormwater runoff; 1,831-foot impact to unnamed tributary to Felts Brook	1	30	Conversion of 48 acres of forests/vegetation land to residential use	
Cumulative Effects for 2B-2/the Preferred Alternative	4,900 feet of streams; unknown impacts from stormwater runoff	26	182	600 acres to forests/vegetation	873
Cumulative Effects for 5A2B-2	4,900 feet of streams; unknown impacts from stormwater runoff	18	187	640 acres to forests/vegetation	924
Cumulative Effects for 5B2B-2	4,900 feet of streams; unknown impacts from stormwater runoff	27	188	600 acres to forests/vegetation	556

foreseeable future actions were limited to those for which a plan or study was completed or funding has been committed, and anticipated environmental impacts can be at least qualitatively characterized. Other actions that would occur would be the continuing practice of agriculture and logging, and while these impacts were not qualitatively characterized, they were acknowledged. Many of the future cumulative impacts on resources within the study area are projected to be generated by future residential and commercial development that cannot be fully characterized.

Potential cumulative impacts to those resources analyzed, with and without one of the build alternatives, would generally follow existing patterns and development trends. Residential and commercial

development likely would continue to occur within the region at the same rate and with the same characteristics with either the No-Build Alternative or one of the build alternatives, and it would serve as the major source of land-use conversion and contribution to cumulative resource effects. Few other reasonably foreseeable future actions were identified that would contribute to the cumulative impact of the resources analyzed.

Within the study area, population and housing are projected to grow at a slow rate from 2010 to 2020 (Maine State Planning Office, 2003; 2008a; 2008b). The most substantial changes are projected to occur in Holden (which has the highest growth rate in the study area of eight percent and the housing growth

rate of 5.4 percent) and in Eddington (an increase of 5.7 percent in population and 8.8 percent in housing). Brewer is projected to experience a decrease of about 0.8 percent (approximately 71 fewer people) by 2020. These projections demonstrate the current land use trends in the study area, which show residents and housing moving from the more urban areas in Brewer and other parts of Bangor to adjacent suburban and rural areas. Although the number of housing units is slowly increasing through 2015 with an overall growth rate of 5.1 percent, overall population growth in the study area through 2020 remains generally flat at 2.4 percent, demonstrating movement of the existing population within the study area rather than a large influx of new residents. The trend is supported by 2020 projections for the city of Bangor (the major population center in the region), which show housing-unit growth of 2.3 percent but a decrease in population equal to approximately -15.5 percent.

According to Maine's Beginning with Habitat program, unfragmented habitat blocks are defined as areas that encompass 100 acres and are at least 500 feet from development and improved roads (Beginning with Habitat, 2008). The area analyzed for vegetation and habitat encompasses approximately 296 square miles because it includes the unfragmented habitat blocks in their entirety that extend beyond the study area. The cumulative impacts of the build alternatives

on unfragmented habitat blocks are between 550 and 925 acres.

**Surface Waters and Floodplains.** Surface waters have been and would continue to be influenced by land use and development. The cumulative effect of the past, present, and reasonably foreseeable future impacts consists of an increase in impervious surfaces. Cumulative impacts on surface waters and floodplains would be largely influenced during the next 20 years by additional roadway and bridge construction. With the exception of construction of a build alternative, no new major roads are anticipated and local road and bridge projects are not expected to have a substantial effect on surface waters and floodplains. The build alternatives would add impervious surface to the study area. Residential and commercial development would have a continued effect on surface waters by increasing stormwater as more impervious surfaces are created. Increased stormwater runoff would cause the water level of nearby streams to rise more quickly during storms.

The build alternatives would directly impact between approximately 222 and 567 feet of stream and two to 11 acres of floodplains. The cumulative effects of the past, present, and reasonably foreseeable future actions would impact approximately 4,900 feet of stream and 18 to 27 acres of floodplains. The

cumulative effect of the past, present, and reasonably foreseeable future impacts to stormwater runoff result from an estimated 695-acre increase in impervious surfaces. The increase in surface-water quantity would be accompanied by a decrease in surface-water quality from non-point source pollutants (e.g., oil from automobiles) that are carried by stormwater runoff into receiving streams and the Penobscot River.

Buffers improve water quality by helping to filter pollutants in run-off both during and after construction.

**Wetlands and Aquatic Habitat.** Cumulative effects on wetlands and aquatic habitat are likely to continue as development occurs; however, important aquatic habitat would remain protected through conservation laws. The build alternatives would directly impact between 26 and 32 acres of wetlands. The cumulative effects of the past, present, and reasonably foreseeable future impacts to wetlands would be approximately 180 to 188 acres.

Future wetlands loss would be limited by state and federal laws protecting those resources through mandatory mitigation for both public and private initiatives. Important aquatic habitat is projected to remain protected through conservation laws; however, changes in the upstream watershed from increased suburban development would continue to affect water quality and habitat in the study-area water environments.

Current practices result in a number of road-stream crossings (public and private) being built or replaced with structures that negatively impact stream habitat and aquatic organism passage.

**Vegetation and Wildlife Habitat.** Vegetation and wildlife habitat would continue to decrease and habitat would become more fragmented as more land is converted from forest and grasslands to residential and commercial uses. The build alternatives would directly impact between 71 and 85 acres of forests. The cumulative effect of the past, present, and reasonably foreseeable future impacts to forested areas would be approximately 556 to 924 acres.

The decision to pursue residential and commercial development is influenced most by local and regional development trends and prevailing economic conditions. Therefore, the difference in the cumulative-effects contribution of the No-Build Alternative and one of the build alternatives is limited to the difference in direct impacts associated with each build alternative.

## **3.8 Mitigation and Commitments**

This section describes the mitigation measures and commitments being considered in support of the development of Alternative 2B-2/the Preferred Alternative. The mitigation measures would be developed

further during preparation of the FEIS/Section 404 permit and its review and final design of Alternative 2B-2/the Preferred Alternative.

### **3.8.1 Mitigation**

Prospective compensatory mitigation opportunities for the unavoidable wetlands impacts from the build alternatives were identified within the Penobscot River and neighboring watersheds. The build alternatives are largely on new alignments and no on-site opportunities exist to restore wetlands previously filled by highway construction. Opportunities were identified primarily through the use of existing reports, GIS information, and field data. Initial contacts were made with representatives from the MDIFW, MDOC, MDEP, Maine Forest Service, Maine State Planning Office, Penobscot River Restoration Trust, the Nature Conservancy, and the Forest Society of Maine to learn about local conservation initiatives that could provide suitable mitigation. These opportunities were specific restoration sites and broader areas identified as local or regional conservation priorities. The mitigation opportunities described here are conceptual and additional information would be prepared.

**On-site** – the build alternatives are largely on new alignments and no on-site opportunities exist to restore wetlands previously filled by highway construction.

No other potential on-site compensation areas were identified in the preliminary screening process.

**Felts Brook Parcel** This 120-acre site is located in Brewer and was acquired by the MaineDOT in 1982 as part of the I-395 construction project. The site consists of agricultural fields and wetlands. The mitigation potential consists of enhancement through planting of riparian vegetation, some potential creation opportunities, and preservation.

#### **Lower Penobscot River Stream Barrier Removal.**

This study was conducted by the Maine Forest Service in cooperation with the USFWS and Gulf of Maine Coastal Program. There are 287 crossings (the majority are culverts) surveyed in the Lower Penobscot drainage that have been identified as aquatic-organism barriers primarily due to structural deficiencies. Crossings surveyed consist of a variety of problems: inlet blockages, inlet drops, perched inlets and outlets, shallow water depths, high velocities, and lack of natural substrates. The most prevalent problem is perched outlets at 204 crossings. There are numerous opportunities identified in this study to begin the process of passage restoration using mitigation funds from the I-395/Route 9 transportation study.



### **3 • I-395/Route 9 Transportation Study Environmental Impact Statement**

**Sears Island Wetland Bank.** This bank site consists of primarily preservation credit with two areas having restoration and creation opportunities. The restoration opportunity would involve a half-acre fill removal and replanting. The creation opportunity would be a two-acre forested wetland that consisting of grading, drainage, and planting.

**Maine Natural Resources Conservation Fund.** This is an MDEP program that provides permit applicants the option to pay a square-foot price for wetlands impacts that exceed regulatory thresholds. This program may be used to augment a compensation package that has inadequate mitigation for loss of specific wetlands functions and values.

**Lower Penobscot Forest Project.** The Lower Penobscot Forest Project is a partnership between the Nature Conservancy and the Forest Society of Maine that would conserve more than 42,000 acres. This project would be the window to a broader view of conservation in the region — a view that connects the wetlands and woods of Central Maine to the coastal forests and waters of Penobscot Bay and Machias Bay. The streams of the Lower Penobscot Forests drain into Sunkhaze Meadows National Wildlife Refuge — founded in the late 1980s when the Nature Conservancy purchased more than 10,000 acres of raised dome peat lands to

protect them from peat mining. The Conservancy would purchase a conservation easement on more than 12,000 acres along the southeastern border of Sunkhaze to establish an ecological reserve. The reserve would border MDOC lands and the Lower Penobscot Forest Easement, which would be conserved by an easement purchased by the Conservancy and transferred to the state. To the south, the remote ponds and red-pine woodlands of the Amherst Tract would be conserved by fee and easement purchases by the Forest Society of Maine. To the northeast, Lower Penobscot forest lands neighbor those protected by the state and the Conservancy in the Upper Machias River Watershed. The Nature Conservancy is raising public and private funds for this project. Placing these forests under conservation is part of a larger vision of conserved lands stretching from Bangor to Acadia National Park. There are opportunities to assist the Nature Conservancy and the Forest Society of Maine with land acquisition and/or easements.

**Holden Conservation Parcels.** The Holden Land Trust (HLT) is looking to preserve a large undeveloped land holding under the name of Wrentham Woods. This land consists of two adjacent parcels totaling 1,628 acres in the heart of Holden. This large tract of land was recently for sale and is under real and imminent development threat due to its proximity to

the Bangor-Brewer area. The property is surrounded by development.

The Wrentham Woods has exceptional value and significance to the region as it is one of the largest undivided tracts in the greater Bangor area. It is well situated locally in the region so it can be reached within a twenty minute drive of over 50,000 Mainers. It is strategically ready for easy trail connectivity between Holden and the surrounding communities. The property has good access from Mann Hill Road, Eastern Avenue, from snowmobile trails and from the abutting inactive railroad corridor. Wrentham Woods contains open space, forests, an extensive ridge with views of the greater Bangor area, streams and ponds with beaver dams, wetlands containing a great blue heron rookery and other waterfowl and wading birds, and a variety of other wildlife such as deer, moose, bear, bobcat, fox, coyote and turkeys. Besides maintaining the land as a working forest, HLT envisions this unique property being made available to the public for low-impact recreation such as hiking, biking, cross-country skiing, fishing, trapping, horseback riding, hunting, snow-shoeing and snowmobiling. Holden has no conserved property to date. HLT's desire to conserve this land is consistent with the goals of the 2007 Holden Comprehensive Plan, the 2010 Holden Open Space Plan, and the 2009 Penobscot

Valley Community Greenprint to help secure a high quality of life for generations of citizens.

**Fish Passage.** Ideally, to pass fish effectively and minimize impacts to EFHs, crossings must satisfy the following criteria:

1. **Design Peak Flow:** This represents the optimal design that minimizes the expected cost associated with flooding.
2. **Maximum Velocity:** Determining approximate maximum water velocities for assessing whether the target fish population could swim upstream against the current at critical periods.
3. **Minimum Depth:** Providing minimum depth ensures adequate water depth during periods of simultaneous low flow and fish movement. New and replacement pipes should be sized for consistency with the natural channel bank full width and depth, with the implicit assumption that such sizing would produce automatically the desired flow velocities and depths.
4. **Gradient:** Culverts should be installed at the proper elevation to avoid perched outlets that fish cannot access. Pipes should be embedded and allowed to fill in to maintain a continuous, natural gradient.

#### **3.8.2 Commitments**

The following is a summary of the commitments from the MaineDOT and the FHWA in support of the development of the build alternatives to avoid and minimize impacts to a variety of natural resources:

- Alternative 2B-2/the Preferred Alternative will be a controlled-access facility; motorists would be permitted to enter and exit from I-395 in Holden and Route 9 in Eddington.
- The highway drainage and stormwater management system would be designed in accordance with the MDEP/MaineDOT/Maine Turnpike Authority Memorandum of Agreement, Stormwater Management, May 30, 2003. Under the MOA, the MaineDOT would be required to meet the General Standards under Chapter 500 to the extent practicable as determined through consultation with and agreement by DEP. Under the Chapter 500 General Standards for a linear project, MaineDOT would be required to treat 75% of the linear portion of Alternative 2B-2/the Preferred Alternative's impervious area and 50% of the developed area that is impervious or landscaped for water quality. To meet the General Standards, a project's stormwater management system must include treatment measures that would mitigate for the increased frequency and duration of channel erosive flows due to runoff from smaller storms, provide for effective treatment of pollutants in stormwater, and mitigate potential temperature impacts.
- Erosion and sedimentation control measures would be developed and incorporated into the final design of Alternative 2B-2/the Preferred Alternative and implemented during construction, in accordance with section II of the MaineDOT's *Best Management Practices Manual for Erosion and Sedimentation Control* (MaineDOT, 2008a).
- During final design of Alternative 2B-2/the Preferred Alternative, the MaineDOT would further evaluate opportunities to shorten the width of road-stream crossings and preserve the natural stream bottoms in the road-stream crossings to promote the passage of aquatic organisms. Road-stream crossings would be designed in accordance with the MaineDOT *Waterway and Wildlife Crossing Policy and Design Guide* (MaineDOT, 2008e), except in cases where the drainage is not a stream.
- A Biological Assessment will be prepared to assess possible impacts from the preferred alternative to endangered species.
- The build alternatives would each have two wildlife passage structures, large enough to

pass moose and deer, on both sides of Eaton Brook. Wildlife passages would be designed in accordance with the MaineDOT *Waterway and Wildlife Crossing Policy and Design Guide* (MaineDOT, 2008e) and current passage strategies.

- During final design of Alternative 2B-2/the Preferred Alternative, the MaineDOT would work to further avoid and minimize the impacts to streams, wetlands, dispersal habitat for vernal pools, and floodplains. Further minimization of the impact to streams, wetlands, and floodplains would occur through minor shifts in the alignment of Alternative 2B-2/the Preferred Alternative and increasing the slope of fill material, which could reduce the amount of fill material placed in wetlands and floodplains. Hydraulic analysis to size the culverts would be performed during final design.
- The MaineDOT is committed to improving the intersection of Routes 9 and 46. the improvements to this intersection could be accomplished within the existing rights-of-way of Routes 9 and 46 with no impact to the natural and social features adjacent to the intersection. Given the future need and the limited scope of the improvements to the intersection,

a timeframe has not been established for these intersection improvements.

- The MaineDOT is committed to further improving the most heavily congested section of Route 1A in the study area to the south of the I-395 interchange with Route 1A. these improvements could be accomplished within the existing right-of-way of Route 1A. Given the future need for the improvements to Route 1A, a timeframe has not been established.
- The MaineDOT would work with the town of Eddington to maintain the safety and preserve the capacity of Route 9 in the study area. The range of possible activities that could be considered to maintain the safety and preserve the capacity of Route 9, in accordance with Maine's rules governing access management, are working with the town of Eddington to change zoning, eliminate existing and minimize future curb cuts, and working with individual landowners to acquire property or development rights.
- During final design of the selected alternative, the MaineDOT would evaluate options for maintaining the integrity of the existing snowmobile trail system.

· THIS PAGE INTENTIONALLY LEFT BLANK ·